logistics
DB SCHENKER
THE MAGAZINE FOR CUSTOMERS
ISSUE 01 | 09

Facing the future

Stalled by global recession, the logistics business is using the break to consider new business models for tomorrow P. 12

PIRATES
Who will safeguard shipping? P. 32

NETWORK
New links in the global chain of logistics P. 38

EXHIBITIONS
High-speed logistics for the trade-fair trade P. 46

Model aircraft: Bauhaus Luftfahrt conceived the Claire Liner. Its wings and engines are exceptionally energy-efficient.

Photo: P.S.I.BONN/ullstein bild

»New aircraft models require decades of advance work from producers and suppliers.«

Why does it all take so long?
An aircraft is, after all, a very complex product. A new model requires about 20 years of development from the original idea to the first sale. And development will typically cost €10 billion. To break even, you have to sell 150 to 200 units. Any given airplane model is made to be sold for at least 20 years. Take the A320. This aircraft has been in production since 1988, and they will probably still be building them in a few decades. Or the Boeing 747. It was developed in the 1960s. The first one took flight in 1969. With some new technology and materials, these aircraft will still be selling in another ten years.

So there's no real comparison to the rapid production processes and numbers reached by the auto industry.
Aerospace is a completely different kind of organization. Unit production is much lower. In the old days, new model designers assumed they would sell no more than 500 units. Today, with programs like Airbus A350 or Boeing 787 Dreamliner, manufacturers plan to sell about 2,000 units in all. But still, the industry has learned a lot from carmakers. They now use many more CFL composites, which allow more automation than metals do. Metals are much more labor-intensive to process and work with. Nowadays, new model designers take greater account of production processes while still in development. But as much as we are trying to accelerate the production process, it simply cannot be compared to the mass industrial production of automobiles.

Given the problems with the Airbus A380 and the Boeing Dreamliner, both companies have announced they're going to limit the number of suppliers. Will it work?
That's difficult. Suppliers must be integrated as early as the development phase. The two big aerospace companies, Boeing and Airbus, tend to deal with three major engine manufacturers: General Electric, Rolls-Royce, and Pratt&Whitney. With every new model, both Boeing and Airbus try to have at least two of these three major engine-makers on board. They need a guarantee of getting a certain number of engines within a given time. The big engine-makers can also take over some of the development stages. The engine suppliers also run into enormous costs and take years to finally break even. This means that only financially strong companies have a chance as suppliers, which today's crisis only makes worse. Problems also arise between suppliers and their own subcontractors. In the old days, big producers kept all their know-how in-house and had the supply chain under control. Today, that expertise has passed to the suppliers. This is why it may be an advantage for the big producers to bring some of their development and supply chain back into their own companies.

A new model plane: New materials can accelerate aircraft production.

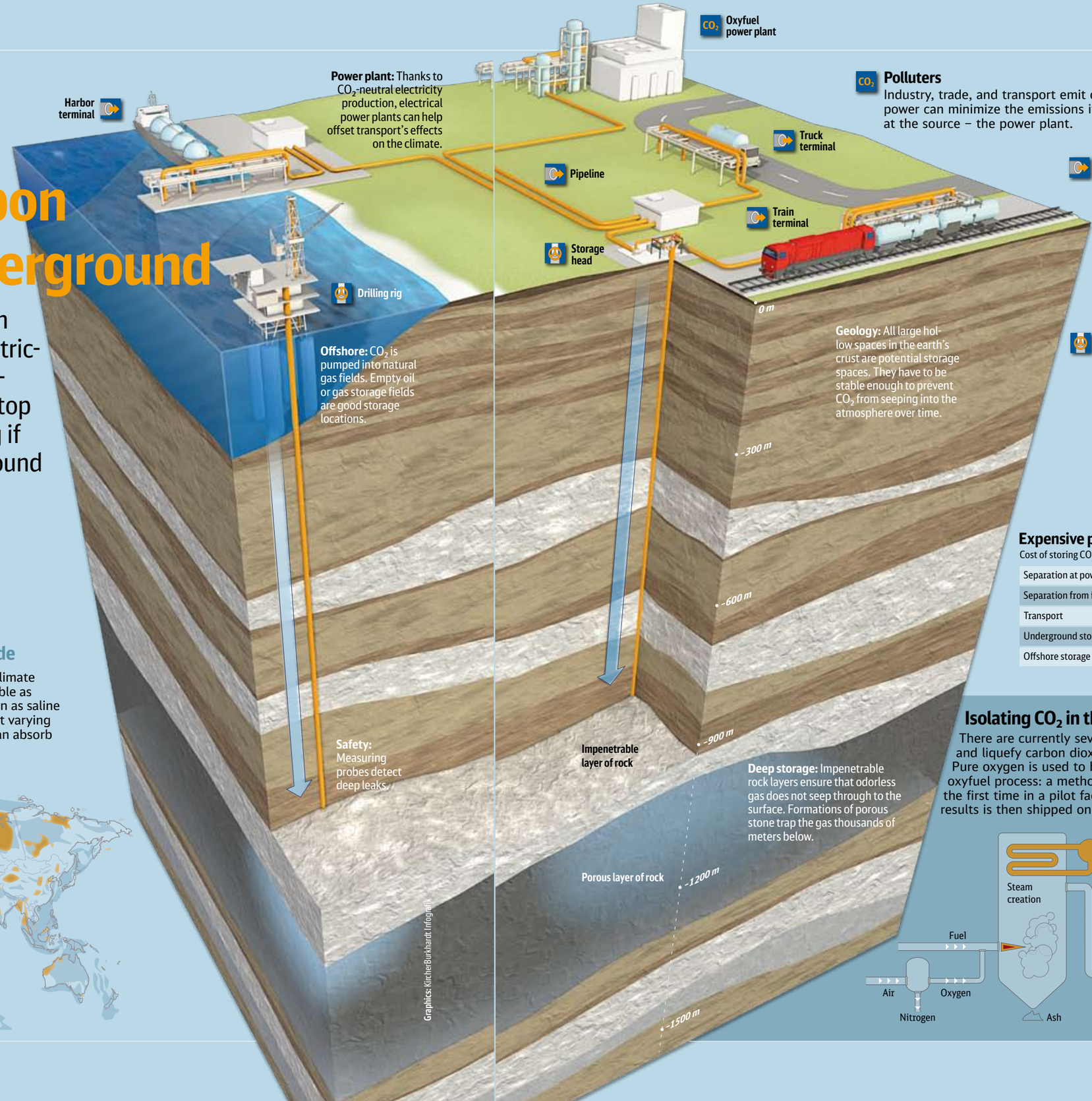
What are the chances for new producers from China or Russia to break into the market?
Companies in these two countries command the technical know-how for aerospace. But they have to give a guarantee to the airlines that any problems in the aircraft will be solved quickly and anywhere in the world. One thing makes the airlines bleed a lot of money, and that's called AOG: Airplane On Ground. They want to avoid that. This means new aerospace producers trying to break into the world market have to have a global concept for replacement parts. And of course that drives up the prices for the first models they develop. It's going to take another decade or so before you see products from Russia or China make it on a global level.

Is that also true of cargo planes?
If at all possible, cargo planes need a large front or rear gate for efficient loading. Right now you have that in only two models, the Antonov and the Boeing B747. In the latter case, it's because it was developed originally for the military. But the cargo plane of the future has yet to be developed. At Bauhaus Luftfahrt we have designed a concept called the Claire Liner, which is meant mainly to fly freight. But in general, the big aerospace producers don't like making cargo planes. They much prefer to sell passenger planes. After a few years in flight, a passenger plane can be re-equipped as a cargo plane and start a second life.

www.bauhaus-luftfahrt.net

Storing carbon dioxide underground

Traffic and transport burden our climate. Producing electricity also creates carbon dioxide, a greenhouse gas. But top researchers are now testing if CO_2 can be stored underground for long periods of time.



CO_2 Polluters

Industry, trade, and transport emit carbon dioxide. Electric power can minimize the emissions if the gas is disposed of at the source – the power plant.

Transport chains

Intercontinental transports can bring the carbon dixoide to underground storage fields on land and at sea via truck, tank car, pipeline or ship. Currently it is pumped into natural gas fields to improve transport of residual gas.

Storage

Several kilometers under the earth, carbon dioxide can be safely stored for millenia. The primary cost of the entire process is not the storage in the stone, but in separating the gases: this procedure costs the power plant or company between $5 and $115 per metric ton.

Expensive procedure

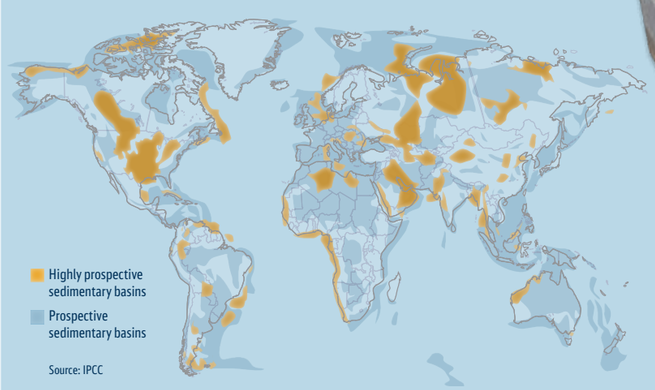
Cost of storing CO_2 in $ per ton

Separation at power plant	15-75
Separation from industrial processes	5-115
Transport	1-8
Underground storage	0.6-8.3
Offshore storage	5-30

Source: IPCC

Possible storage locations worldwide

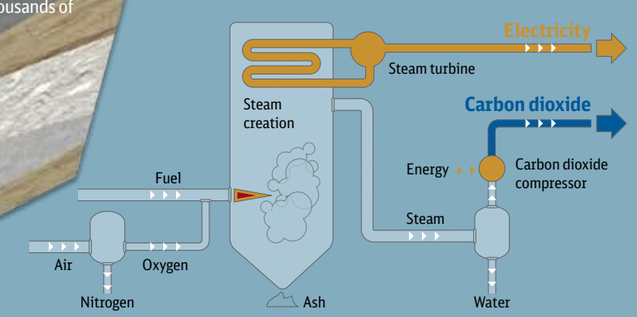
According to the Intergovernmental Panel on Climate Change, special geological formations are suitable as possible storage stations. These areas are known as saline aquifers: porous, saltwater-carrying rock beds at varying depths under the earth's surface. Their pores can absorb carbon dioxide like a sponge.



Source: IPCC

Isolating CO_2 in the power plant

There are currently several procedures to separate and liquefy carbon dioxide, even when it is burned. Pure oxygen is used to burn coal in what's called an oxyfuel process: a method being used in Germany for the first time in a pilot facility. The very pure CO_2 that results is then shipped on.



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logistics

THE MAGAZINE FOR CUSTOMERS

NR. 02 | 09

Ready to go!

Recession in the USA: An in-depth look at the shakedown in the world's largest logistics market… and what it means for you. P. 12

HEAVY LIFTING

Giant power plant parts for Kuwait P. 32

COMBINED TRANSPORT

Shipping straight across Europe is a job for tough realists P. 38

INTERVIEW

Jens-Uwe Fischer on the future of mobility P. 24

LOGISTICS | THE MAGAZINE FOR CUSTOMERS | ISSUE 02|09

STOPPING THE STOWAWAYS

Ships carry a vast array of organisms around the world in their ballast tanks and this causes immense damage to local marine environments. It is time for these secret stowaways to disembark once and for all.

[Text] **Henning Sietz**

The comb jellyfish is native to the eastern coast of the United States. It probably arrived in the Black Sea in the 1970s via the ballast water of ships and began gorging on fish eggs and larvae, devouring the local zoo plankton population on which young fish depended for their survival. This became catastrophic in the 1980s when fish stocks, paricularly anchovy stocks, declined dramatically. Comb jellyfish were also discovered in the Baltic Sea in November 2006. Marine biologists from the Leibniz Institute for Marine Sciences at the University of Kiel (IFM-Geomar) now fear that the intruder will start feeding on the local stock of cod's eggs. "We have so far not been able to prove the presence of comb jellyfish in ballast tanks, but it is the only way they can have reached the Baltic Sea," says Stephan Gollasch, a marine biologist from Hamburg who has been testing ballast water treatment systems on board ships for years.

{Dr. Stephan Gollasch, marine biologist}

»The displacement of foreign species is continuing unchecked today.«

The comb jellyfish is no isolated case. Fifty years ago, the zebra mussel made it from Europe to the Great Lakes of North America. It blocked filter and cooling water systems in additon to piping systems at power stations and manufacturing plants, thereby forcing operators to undertake costly cleaning and repair measures. The gateway for the migration was the St. Lawrence Seaway, a system of canals opened in 1959 that allows ocean-going vessels to travel from the Atlantic Ocean to the Great Lakes. Like the comb jellyfish, the zebra mussel can only have made this journey via ballast tanks.

While ships used to take onboard ballast in the form of sand, gravel or large stones, the introduction of pumps at the end of the 19th century meant that seawater could be taken as ballast in tanks instead. Right away, large numbers of sea dwellers came aboard ships as stowaways. The Asian alga odontella sinensis was spotted in the North Sea as early as 1903; the poisonous Japanese plankton alga emigrated to Australia in ballast tanks; the American razor clam conquered the North Sea; and China's mitten crab, which was sighted in the Aller river in Germany as early as 1912, sparked quite a bit of trouble along the lower Elbe ten years ago. According to Gollasch: "The damage caused by the presence of this Chinese intruder is estimated at €80 million in Germany alone."

Gollasch's list continues: In the North Sea, scientists discovered around 175 invaders, 73 of which could be detected in ballast tanks. In the Mediterranean Sea, approximately 600 foreign species were counted, some 150 of them in tanks. More than 180 foreign organisms were counted in Australian waters. Each penetrating species can substantially disrupt the existing food chains, which sometimes even leads to the extinction of other species."The displacement of foreign species is continuing unchecked today," explains Gollasch.

The explosive nature of this mounting danger was recognized years ago, prompting the International Maritime Organization (IMO) to organize a 2004 convention in London according to which all large ships must be equipped with a fully certified system for treating ballast water by 2016. The only problem is that thus far, an insufficient number of nations have pledged to uphold the convention.

If it does come into effect, however, around 60,000 ships worldwide will need to be quickly equipped with an appropriate system. No surprise, then, that several dozen firms are already producing the necessary technological equipment – even today, the market is worth billions. The crucial thing now is proving the effectiveness of the technology: The IMO has called for six-month monitored tests on land and at sea. It will thus be many years before a complete ballast water treatment system is ready for the market. But while the technological element may thereby be solved, the question of how to inspect ships in harbor remains unsettled. This is the main reason why the IMO has not yet been able to implement its ballast water convention.

Ballast water can be treated in three ways: mechanical filtering, chemical disinfection, and physical disinfection. In most cases, organisms larger than 50 micrometers are filtered out of the water, after which the water is either physically irradiated with ultraviolet light, disinfected with ultrasound, or treated chemically – a process that requires large quantities of chemicals to be taken onboard. The quantity of ballast water poses a problem for these technologically proven processes. An oil tanker with a 300,000-ton load-carrying capacity needs more than 100,000 tons of ballast water on an empty run. The systems are expensive and sophisticated; they take up space and require constant monitoring.

In the meantime, engineers have been developing ships that require less ballast or can even do completely without it. Japanese experts devised a Non Ballast Water Ship (NOBS) that is best used as a tanker or bulk carrier. The blueprint is based on the fact that wide, flat-built ships need less or even no ballast in order to maintain their stability. A project by the Delft University of Technology seeks to develop the parts of a ship that aid buoyancy under the shell plates. The result would be a cross-section faintly reminiscent of a catamaran – hence the name Monomaran for this one-hull ship. A third project, the Ballast-Free Ship, was devised by Michael Parsons, professor of marine engineering and naval architecture at the University of Michigan in the United States. During this ship's journey, several valves open up in the bow. Seawater streams into a ballast tank piping system and leaves again at the stern.

These technological innovations have not yet been tested in practice, however. The IMO is currently in the process of having around 30 systems checked. So far, five of them have passed the tests – two of them from German manufacturers. ■

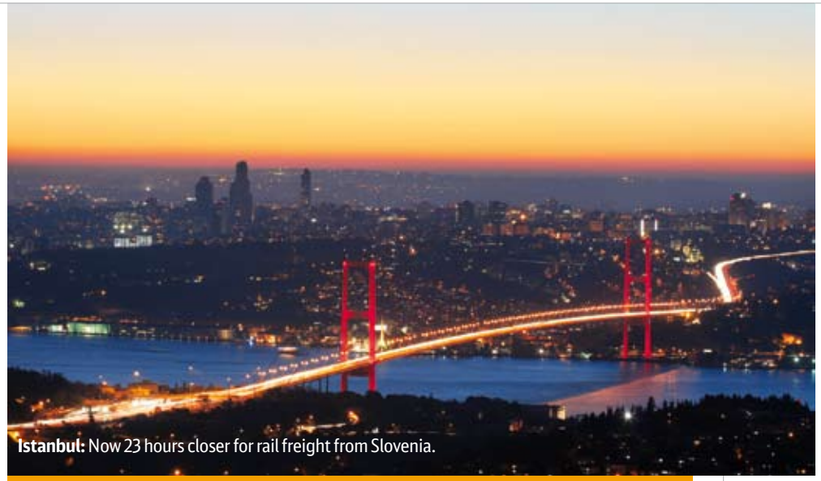
Oceanic interloper: The zebra mussel causes much damage in North American waters.

Photos: Reinhard Dischert/mauritius images, Dr. Gollasch

Rail-based logistics

■ **DB Schenker Logistics** has prepared itself for rail-based logistics across Europe. DB SCHENKERrailog specializes in forwarding logistics by rail, and forms part of DB Schenker's ground transportation offer. DB Schenker is bringing together its former Railog and Fertrans subsidiaries with this new service. "We are now providing our customers with even better support to include the railroad in their plans and operations," says Karl Nutzinger, Schenker AG board member responsible for Land Transportation. Daniel Wieland has been in charge of the service since April 2009.

DB SCHENKERrailog brings together all of DB Schenker's rail logistics expertise.



Istanbul: Now 23 hours closer for rail freight from Slovenia.

Reducing rail times to Asia

■ **A test container train** has now traveled from central Europe to the edge of Asia in only 37 hours. Sixty hours is normally required for the journey. The train from Ljubljana, Slovenia, to Istanbul, Turkey, is a joint project between the national railroads of Slovenia, Croatia, Serbia, Bulgaria, and Turkey. DB Group employees were part of the project. They supported the carriers by acting as advisors and mediators. The biggest savings in time were achieved through a close cooperation of the five national railroads, streamlined customs processes, and by using double traction with a multi-system and a diesel locomotive. Structural and operational improvements are intended to reduce travel time on the 1,577-kilometer stretch to as little as 25 hours by 2014. The train will then be twice as fast as a truck, which takes 57 hours to travel by road between Slovenia and Turkey.

Top supplier: Dr. Karl-Friedrich Rausch, responsible for the Transportation and Logistics division of DB Mobility Logistics AG (center).

VW awards DB Schenker

■ **Volkswagen honored** DB Schenker as a top supplier through the automakers Group Award 2009 last month. The award acknowledges the exceptional commitment shown by Schenker Automotive Railnet (SAR) in developing the logistics concept for supplying components to the new Volkswagen/Skoda plant in Kaluga, Russia. SAR, part of Schenker Automotive Rail, coordinates deliveries with various railroads and guarantees supply assurance in Kaluga.

Abu Dhabi Classics: voice by Cecilia Bartoli, logistics for the series by DB Schenker.

DB Schenker's classical logistics

■ **Cecilia Bartoli is** indisputably one of the leading singers in classical music. Here are just some of the extraordinary numbers associated with her career: six million CDs sold, more than 100 weeks in the international charts, four Grammys, seven Echos and a Bambi, two Classical Brit Awards, the Victoire de la Musique, as well as many other famous awards, and numerous gold albums. Bartoli also says she has the best sales record at the moment of all classical artists. One of her concert highlights took place in Abu Dhabi at the end of last year, where the mezzo-soprano, together with the Basel Chamber Orchestra, performed works by Rossini, Bellini and other composers. Bartoli enthralled the public with her program, which was called "The Romantic Revolution." The background to the show was the Abu Dhabi Classics series of concerts. Since 2008, the small, wealthy emirate of Abu Dhabi has been inviting culture-lovers to a range of top-class concerts, for example by the Bayreuth Festival, the Vienna Philharmonic, and the London Philharmonic Orchestra. Conductors featured included superstars Christian Thielemann, Lorin Maazel and Zubin Mehta. Soloists in addition to Cecilia Bartoli included the pianist Lang Lang. The world-famous stars put the Emirate at the centre of the international classical music scene for the duration of the series, which just ended in May. DB Schenker handled a portion of the logistic arrangements, ensuring that the artists and their valuable instruments reached the concert venue in Abu Dhabi safely and on time.

Actor Jeremy Irons at the opening event of the Abu Dhabi Classics series.

Photos: DB AG (2), istockphoto, Guido Harari/laif, Abu Dhabi Classics

logistics

DB SCHENKER

THE MAGAZINE FOR CUSTOMERS

ISSUE 03 | 09

DUBAI

How the emirate is going green in a big way P. 24

INNOVATION

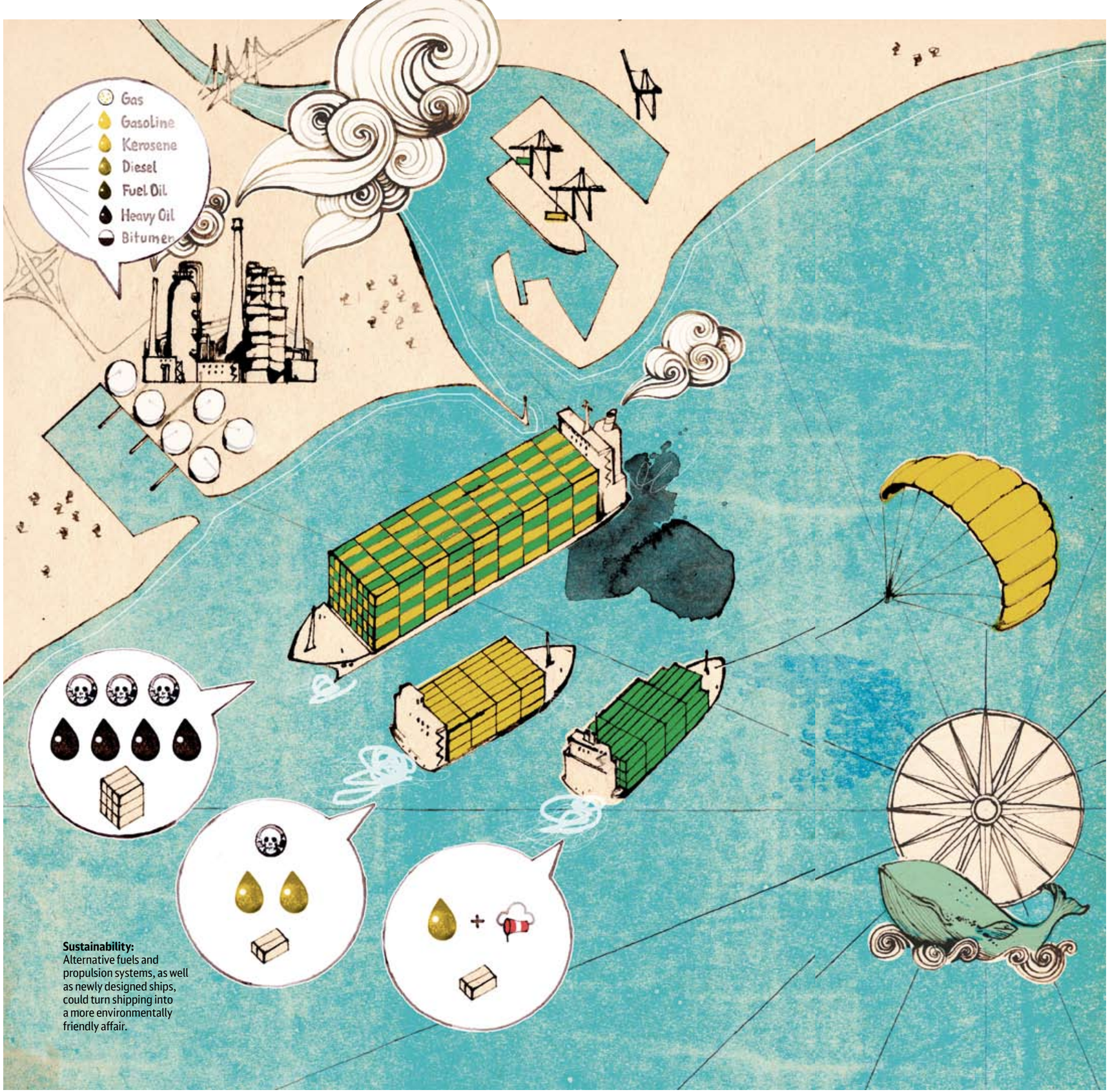
Who says this is a conservative business? P. 28

SEA FREIGHT

Waving goodbye to heavy oil P. 36

The lowdown on knock down

Why partially assembled vehicles are a door opener for the logistics trade, and what DB Schenker Rail is doing about it P. 12



Sustainability: Alternative fuels and propulsion systems, as well as newly designed ships, could turn shipping into a more environmentally friendly affair.

Farewell to heavy fuel oil

Is shipping environmentally friendly? Not when the vessels run on high-emission bunker oil. This is set to change, however.

[Text] **Henning Sietz** [Illustration] **Martina Leykamm**

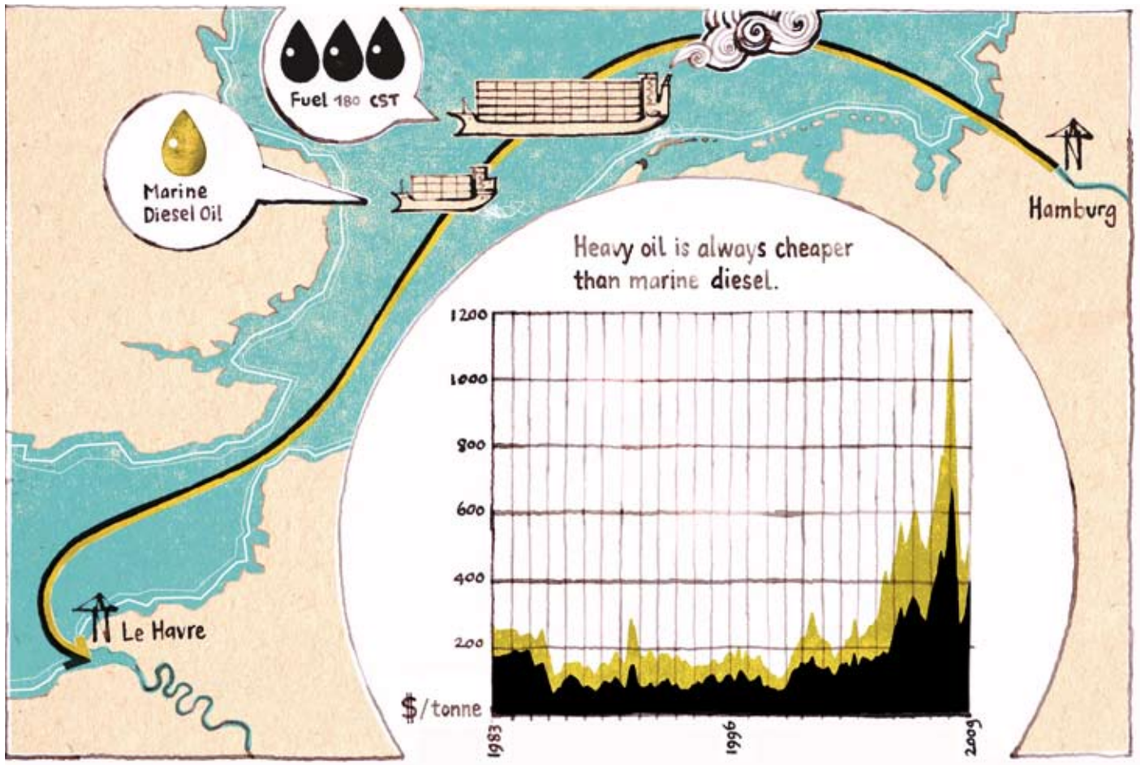
During its worst crisis in decades, the maritime industry is confronted with a boatload of challenges. A substantial oversupply of ships has caused cargo-shipping rates to go through the floor, while bunker fuel prices have risen significantly. At the same time, shipping companies are preparing for a new wave of environmental regulation. Tighter standards for sulfur and nitrogen emissions could take effect as early as next year. Another proposal for the shipping industry is on the table: this one would require ships to no longer use heavy oil as fuel. They would, instead, burn diesel fuels, which have been shown to be more friendly to the environment.

Not surprisingly, this solution would cost large sums of money. On the one hand, diesel costs considerably more than the traditional heavy fuel oil, or "bunker" fuel, as it is known in the industry. The amounts are vast – a veritable sea of oil. The world's trading fleet comprises some 50,000 ships, consuming approximately 370 million tons of heavy fuel oil each year. On the other hand, this less-expensive heavy oil is the fuel that most traditional ship engines are designed and built to burn.

Bunker fuel is a peculiar substance. When crude oil is refined and the more valuable gasoline, kerosene, and diesel oil have been distilled, a tar like compound is left behind. This compound is tough, pitch-black, and full of highly toxic residues – notably, sulfur, heavy metals, and sediments, as well as water. While this jet-black substance could reasonably be treated as hazardous waste, the world market currently pays a price of $420 per ton for it, as heavy fuel oil.

The shipping industry has been grateful for this waste fuel, which for decades was cheap to acquire. Prices have risen dramatically, but only in recent years – the result of globalization and the attendant price fluctuations in higher-grade fuels. For a long time, shipping companies and shipyards didn't have to consider ways to improve their vessels' flow properties in order to reduce their oil consumption. Bunker fuel was cheap – too cheap.

The use of heavy fuel oil is a highly problematic affair, and no one knows exactly what is involved. Shipping companies are highly apprehensive.Some fuel suppliers are suspected of mixing heavy fuel oil with waste oils and other substances to avoid costly disposal fees. Hence, a regulation is mandatory from Marpol, the authority which defines the international marine pollution standards known as the Marpol Convention: Four samples of product >



must be taken from each fuel supplier. The samples are stored in sealed bottles, one of which goes to a specialist laboratory for examination.

Manufacturers have invested decades developing sturdy, two-stroke and four-stroke diesel engines so that this waste fuel can be used at all. On board the ship, the effort is considerable: the fuel has to be heated to 60 degrees Celsius, so that the tough compound can even be pumped. Separators extract water and sediments, creating an oil sludge that must be off-loaded at port. Before it can be injected into the engines, the fuel must be heated further, between 135 and 145 degrees. The main engine and auxiliary diesel engine are ideally configured for this fuel.

No less problematic are the emissions. Heavy fuel oil has a relatively high percentage (up to five percent) of sulfur that doesn't burn in the engine. Sea going vessels offer an environmentally friendly means of transportation, considering the ratio of emissions to the amount of goods transported. There is, however, considerable contamination of seaports and coastal areas, and a significant amount of this pollution comes from sooty airborne particles and sulfur.

As a result, in 2008, the International Maritime Organization (IMO) supplemented the existing Marpol Convention with new limits for gaseous sulfur (SOx) and nitrogen (NOx). Additional limits were also imposed for the Sulphur Emission Control Areas (SECA) of the North Sea and Baltic Sea. These limits are more stringent and will take effect sooner.

The regulations allow for two possibilities: either the ship runs on fuel that has a low proportion of sulfur to begin with, or it must purify its emissions on board.

{Hans-Joachim Götze, Germanischer Lloyd}

»A scrubber costs 50–100% of the price of an engine.«

In terms of cleaning up emissions on board, ship engineers are turning to systems that are being used by land-based incinerators, namely, emissions "scrubbers." Following several years of testing, the Finnish engine manufacturer Wärtsilä recently received approval for its sulfur gas scrubber, designed for use in the Baltic Sea. The system was approved by the marine certification agencies Germanischer Lloyd and Det Norske Veritas before being installed on an auxiliary diesel engine of the Finnish oil tanker *MS Suula*. The engine was driven by heavy fuel oil, and emitted exhaust with varying levels of sulfur. Long-term measurements showed that the new equipment cleaned 99 percent of sulfur emissions, 30 to 60 percent of the particulate matter, and 3 to 7 percent of nitrogen. Because the Baltic Sea SECA regulates only emitted sulfur, the Finnish scrubber would be sufficient for shipping there.

But what happens to pollutants that are filtered from emissions on board? Ferries on short routes can collect the scrubber-washing water in tanks and store it for later disposal on land. This, however, is impossible for vessels on longer routes. It doesn't take long to collect large volumes of wastewater, which would have to be treated on board before being pumped back into the sea. "The IMO has strict rules on water discharges, governing pH [acidity], concentrations of hydrocarbons, and suspended particles," says Karin Sigel, who oversees environmental protection for shipping at Germany's Federal Maritime and Hydrographic Agency. "These values must be monitored and enforced."

Shipping companies are faced with higher costs in the quest to reduce harmful emissions.

Now, the United States and Canada are expected to establish a SECA, as well as NOx emission control areas, imposing limits on both sulfur and nitrogen. Once again, maritime engineers may rely on a familiar technology: the catalytic converter. In this case, however, the process becomes technologically inricate. "Scrubbers and catalytic converters almost cancel each other out," says Hans-Joachim Götze, head of the department for combustion engines and the environment at Germanischer Lloyd. "In the scrubber, emissions must be cooled from around 300 to 70 degrees," says Götze. "The catalytic converter, however, requires emissions to be around 290 degrees." It might seem logical, then, for the system to send hot emissions from catalytic converter to scrubber. But this, too, is unfeasible: the catalytic converter does not handle sulfur well.

An American classification organization has announced that it has found a solution to the problem, but details are lacking.

In any case, the investment required for on board purification equipment is heavy. "A scrubber costs from 50 percent to 100 percent of the main engine on board," says Götze. "To install a catalytic converter on a ship, the shipping company must pay almost the full price of the engine." Finding the most cost-effective method is becoming a crucial question for the maritime industry: low-sulfur fuel or purification equipment on board? Low-sulfur fuel oil is around $100 per ton more expensive than sulfur-laden fuel. "With a daily consumption of 50 tons," says Götze, "the annual costs are substantial."

Companies face different – and similarly unclear – circumstances, depending on the region and emission control area. "The shipping companies are assuming a wait-and-see attitude," says Max Johns, spokesman for the German Shipowners Association.

Given the high costs of development, the problem could also become a matter of survival for engine manufacturers. Their ship engines are designed for heavy fuel oil, and custom-made according to a high or low percentage of sulfur.

Problems could arise if a ship traveling in the Atlantic, or in the North and Baltic Seas, needs to switch from heavy fuel oil to diesel. "Heavy fuel oil has to be heated before it can be injected into the engine," says Hans-Joachim Götze. "But this is not the case with diesel oil."

Engines whose expansion is conditioned by heat tend to leak when "cold" diesel fuel is used, according to Götze. Leakage, in turn, leads to engine stress. "Heavy fuel oil lubricates the pumps," he says. "Diesel fuel doesn't. So, in most cases, conversion of the power unit is necessary."

No one knows how oil refineries will respond to the situation. Can they produce large volumes of low-sulfur fuel oil? And will they want to? If more distillates can be extracted from crude oil, then sulfur-laden fuel oil will become scarce – and costlier. In this case, shipping companies that opted in favor of installing scrubbers on their vessels will have made the wrong choice.

Those companies that make a quick-conversion to the lower-emitting diesel oil will certainly need new engines. In most cases, however, such a move will save them the trouble of retrofitting purification equipment and other related waste-disposal costs. ■

Photos: CIMAC Circle 2008, H. Müller-Elsner/DB AG

Container ships can reduce emissions by applying innovative concepts.

GREEN SHIPPING

Crossing the sea using less fuel

■ **DB Schenker,** working with shipping company Hapag-Lloyd, is offering companies the chance to book reduced-speed container ships between Europe and Asia. For destinations in Sweden (the "green trade lane"), companies have the opportunity to develop "green" distribution operations on-site. The ships run at 20 knots instead of 23 knots, which saves fuel consumption by as much as 30 percent. The transport time is increased by a maximum of four days.

■ **A mix of measures:** Shipping companies convert vessels working along coastal areas to use cleaner-burning fuels ("cold ironing"). Waste heat is also used for energy needs at sea. Vessels can also reduce emissions by plugging into electric systems at port.

■ **Shifting traffic** to the sea is a good choice for short trips. DB Schenker is working in the "Short Sea" sector with its partner, Containerships CSG, promoting more Baltic Sea routes. Hamburg to St. Petersburg is a favorite connection.

www.dbschenker.com/environmental

Calm before the storm: A climber contemplates his next conquest. Days of construction will culminate in a two-hour concert.

Event logistics

The show must go on!

There is a good reason why rock tours are becoming more spectacular. And it's good business for logistics people.

[Text] **Markus Hablizel** [Photos] **Pablo Castagnola**

Dancing cranes: Builders need four cranes to erect the stage in the middle of Berlin's Olympic Stadium.

Reaching the pinnacle: Expert climbers are the superstars in the final phases of construction. Their job is to drape and secure fabric over the imposing steel frame (above and below).

Heavy metal: Each of the stages weighs-in at 600 tons. Setting them up takes six full days.

A UFO has landed in the centre of Berlin's Olympic Stadium. A little man with large glasses launches into a brief speech from the belly of the spaceship: "Do you want to know why we built this gigantic construction? Because we want to be closer to you!"

The more than 90,000 concert goers are flattered, and thank him with frenetic rejoicing. For some reason, in a moment of self-irony, Paul David Hewson, better known as Bono, Irish activist and front man of U2, points out that shortness of stature is a basic condition of becoming a rock star. Though this seems arguable, one thing is certain: in the international pop and rock business, size is an important factor for success, but it often doesn't have to do with the size of an artist.

In an age of dwindling sales of sound recording media, a sector that once boomed for decades has to now refocus itself. It is still in a kind of orientation phase and is trying to find ways to make up for the losses through the expansion of its range of products as well as its tardy, but promising, turn to the Internet and digital sales channels.

The live music sector is one of the most important and lucrative areas. Concerts, often cobbled together quickly, once had to serve as advertising events for current records. The opposite has since become the case. CDs now bang the advertising drum for the concert. Almost every child can download digital music from the Internet, but the collective experience of a concert, and the live link between star and marveling fan cannot be downloaded.

In order to survive in this highly competitive market, the production of concerts is becoming increasingly elaborate, and the tours longer and logistically much more complex. "At the moment, we have some 600 truckloads of equipment spread across Europe," says Okan Tombulca, one of the managing directors of the Cologne-based company EPS, which is responsible for ensuring that the four-legged, stage-bound UFO can actually land in the stadiums. "For the U2 concert in Berlin, we have 38 truckloads of equipment coming from various places, from the Madonna concert in Milan, from the Bruce Springsteen concert in Austria, and from U2 themselves in Paris."

Alongside barriers, security gates, and ramps, EPS also delivers 34,000 square meters of ground and lawn covering, which protects sensitive grassy surfaces and stadium floors. These heavy-duty arena panels make it possible to construct the 600-tonne colossus of a stage with its four, 150-tonne point loads, and make the stadium playable in the first place. The trucks need to arrive six days before the start of the concert. The flooring is laid and the barriers are constructed during a night shift. While independent workers lay flooring at one end of the stadium, a sophisticated system sees the trucks carrying the stage construction admitted and unloaded at the other. The next four days are reserved for the stage construction specialists, while the lighting, sound and video technology is installed on the next-to-the last day. When the Scottish warm-up act Snow Patrol takes to the stage at 8:15pm sharp, more than 130 trucks will have been unloaded, 1,200 tons of equipment built, and 53 kilometers of cable laid. Almost 400 people from 16 firms work on the tour.

{Okan Tombulca, EPS}

»We have 600 loads on the road across Europe.«

The planning for events the size of U2's "360°" tour starts one to two years before the tour starts. Globally active concert agents like Live Global Nation Touring of Los Angeles draw up a concept with the band, and bring on board service providers ranging from the Belgian stage construction firm Stageco through the British logistics firm Transam to EPS in Cologne. There are visits to stadiums worldwide; feasibility studies are carried out; an architect is commissioned with a draft of the stage; a sound, lighting, and video concept is developed, and a production manager is hired – and what is a concert without a conductor?

In this case the maestro is the Englishman Jake Berry, who has already worked for Yes, AC/DC, and the Rolling Stones. For Berry and his employees, all the strands come together, from transport logistics to the washing facilities for the entourage. If a knot develops, Berry and his staff must unravel it. Once the tour concept stands, local organizers are sought at all the respective concert venues in order to clarify the details.

Where can the trucks and buses park? Where are the staff showers? Where can the catering tent be built? What are the legal requirements? When and where does the sun go down? What is the quality of the >

ground? Are there tunnels or pits that cannot bear heavy loads?

The 360° tour is one of the most complex undertakings to date in the careers of all those involved. "This tour is extraordinary, nothing is standard, everything is specially built. The stage, the video walls – and we even had to redraw the details of our ground covers," says Tombulca.

In the course of two years, some seven million people on four continents will have gone to almost 100 concerts. If the pop and rock business was only about sex, drugs, and rock'n'roll, there would be justified doubts about the feasibility of this logistical tour de force. But if you stand in the grandstand of Berlin's Olympic Stadium and take in the crowded picture of trucks, steel girders, ramps, speaker towers, forklift trucks, crates, and hundreds of people, it quickly becomes clear how precisely the cogs have to work together in order to produce only two hours of a live U2 concert.

For Jake Berry, the firms involved are more than mere service providers that convey equipment from A, B and C to D, or that are responsible for only a small part of the process. The tour is

{Patrick Martens, Stageco}

»We drive three sets in Europe at the same time.«

like a living organism made up of all-rounders that, in the right moment, bundles the strengths together and then releases them again.

Tombulca and EPS, for example, not only supply the ground coverings but have also revolutionized the live concert business with precise stadium plans drawn up by their own architects. The plans shows all the emergency exits and escape routes, lines of sight, drink stands, and toilets, and also mark out the location of the stage. Only these plans enabled the London architect Mark Fisher to construct the massive core of the U2 tour. The stage is placed in the center of the stadium and the audience surrounds it. This idea is not new, but it has never been taken to these dimensions. The stage rises more than 50 meters into the sky and is a good 60 meters wide. All the technology hovers 28 meters above the heads of the musicians.

In order for the expensive production to pay off and for enough shows to be played, three stage sets have to be built. One of them is currently in Berlin, a second is coming down in Nice, France, and a third is going up in Amsterdam. There is a team for each location. "We have 30 permanent workers traveling with each stage set," says crew chief for steel construction at Stageco, Patrick Martens. In addition there are 28 "horses" who drive the long distances, deposit their trucks at the stadium, and then fly off to the next location in order to pick up another truck. There are two groups of them taking three stages right across Europe.

Martens is a friendly, solid type who is not unnerved by a few hundred tons of steel that have to be bolted together and ready on time, with no room for mistakes. Without people like him on the road for some nine months a year, and whose family is the crew, an undertaking like the 360° tour would be unthinkable. For them, there is no let-up between dismantling one set and building the next.

Once the final sound of the last European show in Cardiff, Britain, has faded away, Martens and his colleagues will load up the flightless UFO, the ground coverings, and the tons of technical equipment in some 300 sea containers and ship them off to the United States, where the game starts all over again. And Jake Berry, Okan Tombulca, and Patrick Martens will ensure, with their 400 colleagues, that the little man on the big stage can make his next brief speech. ■

Photo: Tungstar/Getty Images

DB SCHENKER EVENT LOGISTICS

A peek behind the scenes

■ **Dozens, sometimes even** hundreds, of logistics experts, technicians, roadies, even cooks, organize the tours of famous musicians and bands from behind the scenes and are on-site before the artists arrive.

■ **DB Schenker** is one of these invisible partners, in Indonesia for example, where DB Schenker's Special Traffic Department recently supported concerts by global stars Sarah Brightman (below), Natalie Cole, and the French band Phoenix. Bon Jovi is coming to Jakarta at the beginning of December 2009, and DB Schenker will be the rockers' logistics partner. And the team at DB Schenker is still talking about one of its biggest concert challenges. Once, 100 tons of equipment for Phil Collins were flown in on a specially chartered Antonow AN 124 to the concert venue on short notice.

DB Schenker client: Sarah Brightman

■ **In May,** DB Schenker in Russia was a partner company for the Eurovision Song Contest. Commissioned by the Moscow city government, the events team ensured smooth logistics behind the scenes. It was the first concert logistics job for DB Schenker in Russia.

■ **DB Schenker is also active** with stars of the classical music scene: the company provided logistics services for the Abu Dhabi Classics event in October 2008 and for the Israel Philharmonic Orchestra's tour of Australia with conductor Zubin Mehta last year.

"We want to be close to you": U2 singer Bono at the concert (above). Left: Guitar technician Dallas Schoo. Below: Patrick Martens and Okan Tombulca (3rd and 4th from right) with colleagues.

The spaceship has landed: U2 in Berlin's Olympic Stadium. While they are performing, an exact copy of the stage is going up in Amsterdam.

logistics
DB SCHENKER
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ISSUE 04 | 09

Team building

The inside story on why logistics has become a sought-after career... and how DB Schenker attracts, and keeps, the top talent of tomorrow P. 12

GROWTH
Dr. Rausch talks about strategies for the future P. 28

AIRFREIGHT
The Eurohub at the airport in Frankfurt P. 36

POLAND
DB Schenker Rail Polska opens to the east P. 40

LOGISTICS | THE MAGAZINE FOR CUSTOMERS | ISSUE 04|09

Why logistics is now a dream job

Our investigation shows that more and more global-minded business students are finding careers in supply chains.

[Text] **Thomas Ramge and Axel Novak**

AUSTRALIA

Waiting for the school kids

They are called "Generation 2020," and they are the leaders and workers of the future. They are still in elementary school today, but 15 years from now they will fill important positions in the Australian economy. "The workers of tomorrow are growing up in an aging society," says Yvonne Villinger, general manager of human resources at DB Schenker in Australia. She says one trait marks these youngsters: "They are the best-educated generation in history, including in material issues." Villinger spends lots of time today thinking about the managers of tomorrow. That's because as the number of good, qualified and dedicated employees falls, competition for the best and brightest is already heating up. "The average age in the company corresponds to that of Australian society," Villinger says. "Our average employee is 36 years old, the executives are 44, and middle management 42." Says Oliver Bohm, director of operations and business development at Schenker Australia: "We already have to be concerned about finding the logistics people of the future, and we have to be faster than the competition. But we also have a lot to offer, because the business is astonishingly exciting." Personnel management and advanced training are a priority at DB Schenker in Australia. But more important is maintaining the workers' high level of commitment. "We have to keep developing our corporate culture, for instance through credible feedback, innovation, networks or coaching," Villinger reports. "And of course, making it fun to work here."

Oliver Bohm, director of operations for business development AU/NZ and general manager NSW at Schenker Australia Pty Ltd.

Yvonne Villinger, general manager of Human Resources at Schenker Australia Pty Ltd.

Photos: Kiren Chang Photography (2)

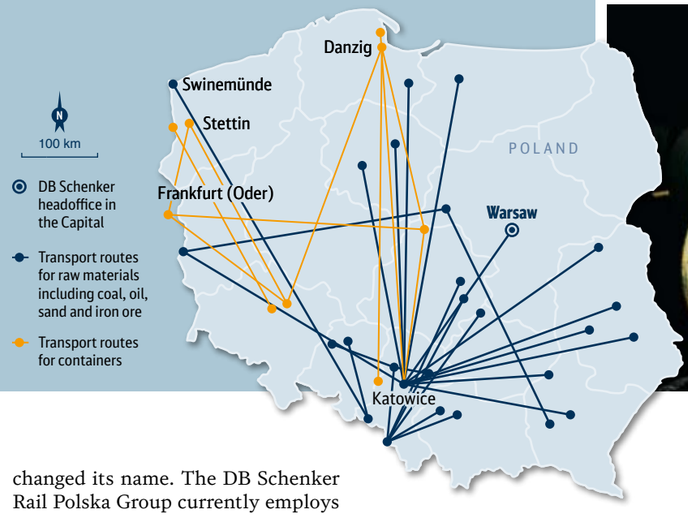
Kings of the rail: DB Schenker workers in Sosnowiec keep Poland's economy moving.

INFRASTRUCTURE

Historical transport routes

■ **The DB Schenker Rail** Polska Group, with its headquarters in Upper Silesia, Poland, operates in a growing market. Its main focus is on coal, sidings and sand mining. The company ran 174 trains a day in 2008.

■ **The Group operates more** than 30 sidings, has access to seven terminals and runs nine vehicle maintenance workshops. The DB Schenker Rail Polska Group also has shares in the ports of Stettin and Swinemünde, so the company can offer customers integrated logistics solutions in Poland and neighboring countries.



Cooperation: Martin Friebe, Rafal Hejmo and Piotr Cieslinksi from DB Schenker Rail with a DB locomotive in the background. Below: Witold Zakrewski switching a train.

The DB Schenker Rail Polska Group: 360 locomotives, access to seven terminals and 174 trains daily

Moving freight is no job for late risers. Here at the terminal in Sosnowiec, Poland, locomotives are roaring and ready to go every Monday at 6am. The first trains depart under the cool glow of halogen floodlights. Good morning, Upper Silesia!

The railroad is the most important means of transport in southern Poland, a region that is experiencing strong growth. The mines, power plants, and steel works simply can't function without the rails. Coal, coke, sand or ore, the most basic ingredients of modern industry, reach their destinations on freight cars. Almost a quarter of Polish freight is transported via railroad. This is an enormous amount in comparison with the rest of Europe, and a profitable business for the competitors of the state-owned freight railroad PKP Cargo. There have been many small freight railroads launched in recent years and they are prospering in lucrative niches. The history of the Polish railroad since 1990 is a success story for the competition.

This situation is more apparent in Sosnowiec than anywhere else. The locomotives and wagons from various railroads that emerged from the remnants of the Communist economic system are now in the switching yards and maintenance bays of the DB Schenker Rail Polska Group. They rolled into the new market economy with outmoded but reliable stock, and the relics are serviced here in the simple bay.

Shop floor workers carried out a total of 7,037maintenance and repair services last year, says director Wieslaw Spyra, who is responsible for the facility's 78 workers. DB Schenker Rail Polska has 360 vehicles, many of them state-of-the art, apart from a few dinosaurs from the stock of the former Polish state railroad. Some of those old timers feature engines built with submarine technology. The DB Schenker fleet also includes the electric and diesel locomotives from PTK Holding S.A. Deutsche Bahn had already become a stockholder in the private Polish railroad company as part of its acquisition of PCC Logistics. It increased its share in PTK Holding to around 95 percent in September 2009.

DB Schenker Rail Polska has achieved astonishing growth in just a few years. It was founded as PCC Logistics in 2003 and taken over by Deutsche Bahn last summer, when it changed its name. The DB Schenker Rail Polska Group currently employs around 6,000 workers. Turnover has jumped from €39 million in 2003 to €357 million in 2008. The company has recorded growth of 500 percent between 2004 and 2008.

"We have produced a real success story," says Mieczyslaw Olender, CEO of the DB Schenker Rail Polska Group. Much of the growth has come from acquisitions. "We know the customers, we know what they want, because we have been working with them for many years," says Olender.

The acquisitions have allowed the company to continue to improve its position on the market. Today DB Schenker Rail Polska comprises several regionally operating units that specialize in the transportation of coal, chemicals and construction materials. "The railroad sidings we have operated for our customers over many years have paid off," says Zbigniew Pucek, DB Schenker Polska Group board member in charge of sidings. Some trains transport coal from mines to power plants. Others bring sand to mines to fill the empty shafts. The maintenance of locomotives and wagons of the DB Schenker Rail Polska Group takes place in nearby Rybnik, a traditional center for anthracite coal mining. DB Schenker only recently acquired this large facility, located in front of the gates of the city. Approximately 600 workers inspect up to 40 locomotives and check about 800 wagons annually.

DB Schenker Rail Polska Group's share of the market, based on 51.1 billion kilometer/tons, was about 8.2 percent in 2008. As a comparison, PKP Cargo has a market share of 76.8 percent. That's actually not much for a state-owned company that was spun off a monopoly, the Polskie Koleje Panstwowe (PKP), eight years ago.

The company's strong position among the competition was one reason why DB acquired the firm and made it the hub of central and eastern European business. Poland also has a special role to play. On the one hand, the country lies geographically on the transportation routes to Russia and then onwards to Asia, the markets of the future for European railroads. Rail can only prove its advantages on long stretches by cooperating with eastern European railroads. On the other hand, Poland is the second-largest national railroad market in the European Union, after Germany.

Out of date infrastructure and a lack of offers by Polish railroad companies have meant that the tracks have lost their attraction with trucks winning out, a situation common almost everywhere in eastern and central Europe. But at the same time, the Polish market has remained relatively untroubled by the economic crisis and has been able to grow continually. The firm was even able to break its own transportation records for coal and coke last October.

"The DB Schenker Rail Polska Group means that we are strengthening our position in central and eastern >

Graphics: KircherBurkhardt Infografik