OTTO profil

International edition

The magazine of OTTO-CHEMIE for trade, commerce and industry

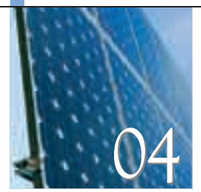
Solar energy.
The future is built on the sun.

Mould.
Where does it come from?
Where does it go?

A new beginning.
The very personal chronicle
of building up the business.

1st

Contents



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LEGAL NOTES
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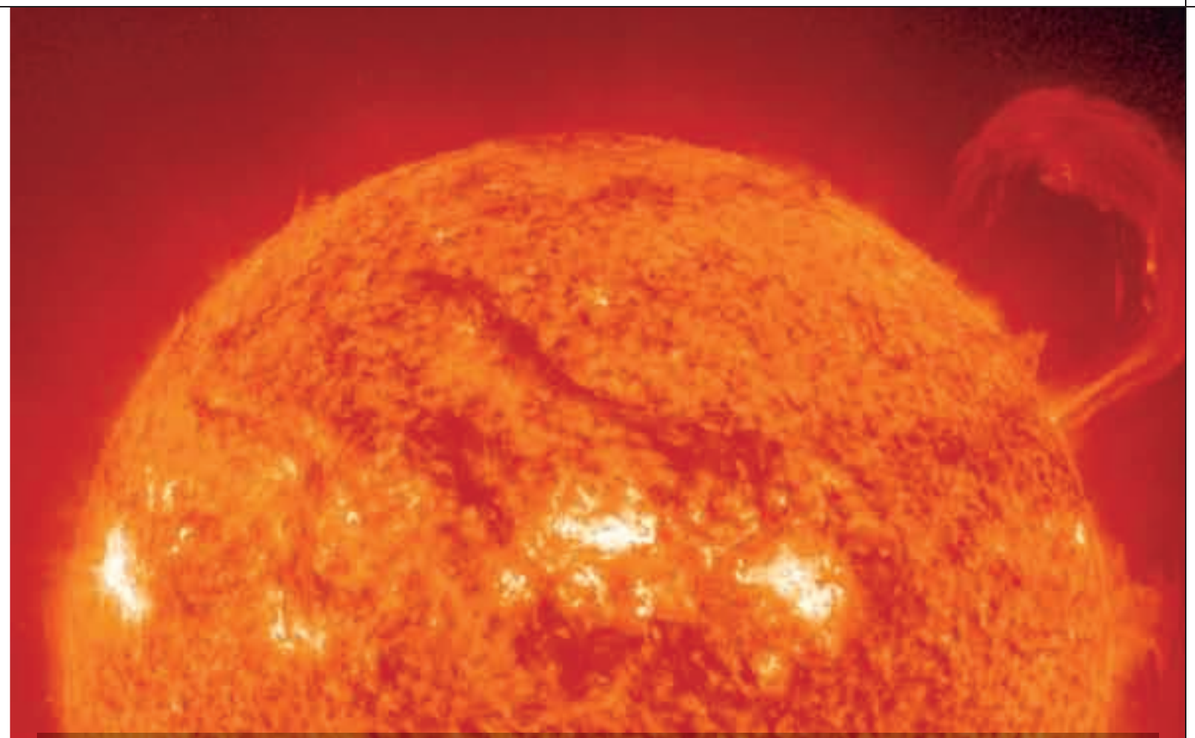
The sun: Source of all life.



Incredible, really: 5.700 °C is the heat of its surface. It obtains its energy from the fusion of 564 million tons of hydrogen to form 560 million tons of helium – per second! Hence the total power it releases is 370 quadrillion Watts. These are conditions that are not particularly conducive to life. Yet the sun affects almost all aspects of our life. Although it is 150 million kilometres away (roughly 3,743 times the circumference of the earth at the equator). For thousands of years points on its course have been decisive for the calendar, seasonal events and hence important indicators for agriculture and shipping. And it provides 99.98 % of the total energy of our planet Earth.
To ensure that this energy is rendered exploitable, that power and heat can be gained from it, which we require so urgently for our daily lives: this is the challenge of the future. How this future might look and where it has already begun is something we will inform you about on the next few pages. And about quite a lot of other things.

OTTO relies on alternative energies.

Solar energy.
The driving **force** for the **future.**

The end of fossil fuels as an affordable source of energy is foreseeable. Nuclear energy remains an uncertain alternative with regard to operation and disposal. In times when prices are on the rise, this makes regenerative energies more interesting than ever. In this context it is primarily solar energy that plays an essential role, in addition to the energy carriers biomass, wind and water. Based on progressive projects taking place now, we are already able to risk a glimpse into the future.

The change has already started.

The trend is clearly leading away from fossil fuels to so-called renewable energies. This has also been recognised in politics and clear objectives have been stated. Already in 2020 over 10 % of Germany's entire energy requirements and over 20 % of the power supply will be covered by energy from wind, water, biomass, solar energy and geothermal plants. According to studies by the Federal German Ministry for the Environment, Nature Protection and Reactor Safety this is by no means utopian.

By the way, it not only benefits the climate. The German labour market is also profiting from this development. Already today renewable energies account for around 170,000 jobs. The Ministry for the Environment claims that even conservative estimates state that number may well double by 2020, particularly regarding highly qualified jobs. A positive development for the German economy is emerging in this sector. In certain technologies that are to help utilise these new energy carriers, OTTO is also involved with high tech products.

Let the sunshine in – with solar energy.

If when Günther Jauch asks you the million-euro question about the biggest continuous photovoltaic plant in the world, don't go for one of the countries in the desert. It is incredible, but true: it is situated in Bavaria. The three solar power plants of the Bavaria Solar parks in Upper Palatinate have been in operation since December 2005. They deliver an output of some 10 megawatts. In Mühlhausen alone 57,600 solar power modules that follow the course of the sun on an axis take care of this. The whole plant covers an area of 25 hectares, which is equivalent to about 35 football pitches. In the next 20 years it will supply 217,000 megawatt hours of electricity for households and business operations from here. Entirely without any emissions: for a healthy, clean environment.

OTTO has also been making its contribution towards this for years. For example, for energy recruitment via photovoltaic plants, adhesive bonds and seals have to be absolutely durable and exact. Whether for bonding the solar cell array into the respective frames or for sealing and effective edge protection: Novasil® products, especially developed for applications of this kind are the measure of all things for many companies in this field. Also for bonding electricity consumers or for encapsulating the entire electronics; not least of all because they fulfil such criteria as weather and UV resistance as well as long-term flexibility and wind resistance (rigidity). Therefore the success of major developments is also and primarily based on the details of technical progress.

More sun, greater areas – Spain is upgrading.

The Bavarian record for solar energy will not last for very much longer. For on the Iberian peninsular they are not only very close to the sun, they are also very close to the world record. In the South, on the edge of the Sierra Nevada near the village of Lacalahorra, approx. 3,000 hours of sunshine per year provide the basis for the first parabolic trough power plant in Europe which is to provide approximately 200,000 people with electricity in future: "Andasol 1".

In just two years' time the 50 megawatt plant is to go on stream, with a collector area about the size of 70 football pitches. This is where the Spaniards benefit from the warmer, sunnier climate. It enables them to use solar-thermal plants to produce energy. And they are significantly less costly than the solar power plants that are customary in Northern Europe. The latter have the advantage of also being able to use diffuse light. However in a place like the Sierra Nevada this is totally unnecessary anyway. Irrespective of the location, this project is not being implemented without the skills from Germany. It was the German company, Solar Millennium, that planned the major Iberian project and it holds a 25 % participating interest in the operating company. The costs of the entire construction: the handsome sum of 300 million euros.

However "Andasol 1" is just the beginning. In just a few months' time building will begin on "Andasol 2" very close by. A good year later, "Andasol 3" is to follow, for the moment the last of the sister projects. However, it appears that Spain's interest in solar energy is not going to abate in the future. The authorities have already received a large number of applications for approval. In all they are to produce an output of over 1,200 megawatts. Sunny prospects for the future.

Photovoltaic plant:
"Extensive coverage" energy production.

Parabolic trough power plant:
Focus on the sun.

Clean work – in development and construction.

Photovoltaics and solar thermal plants – two ways of utilising the sun.

Precisely in Northern Europe photovoltaic plants provide a very good way of utilising solar energy. In this case electric energy is recruited directly from sunlight with the aid of solar cells; even if the sky is cloudy, in diffuse light conditions.

In regions where the sun shines longer and with greater intensity, solar thermal plants are the more efficient option. They generate electricity from the heat energy of the sun radiation they collect. In the case of a parabolic trough power plant trough-shaped mirrors concentrate the incidental rays onto a tube in the focal line of the collector. There a heat carrier fluid is heated, which then generates steam via a heat exchanger in a power plant block. As in conventional power plants the steam is then used in a turbine to produce electricity. If a thermal accumulator is also integrated, it is even possible for electricity to be generated after sunset and energy supply can be scheduled.

OTTO and SolarWorld – Hand in hand into a sunny future.

SolarWorld, a customer of OTTO, is meanwhile one of the three largest solar power companies worldwide. The products required for solar module production are manufactured in Freiberg in Saxony. Here on the periphery of the former mining metropolis the foundation stone for a clean future is being laid. Here all of the products are manufactured that are essential for producing solar modules. Let's take a look inside:

Solar silicium is made from silane, the raw material that forms the basis for the production of solar power. Discs – so-called wafers – are produced from this silicium. They are the basic element for the production of solar cells. The wafers are processed in the production cleanrooms. Solar cells are produced with an efficiency rate of 15 to 17 %. In a worldwide unqiue production process the solar modules are produced fully automatically in Gällivare, Sweden and Camarillo, California. And OTTO is involved in the process with special 2-component silicone adhesives and encapsulants.

Thereafter they are ready: After a thorough final inspection the module is tested and packed ready for dispatch. SolarWorld's own logistics ensures careful and punctual delivery all over the world. More information about our partners is to be found on the Internet at www.solarworld.de.

It's taking part that counts! The home power plant – with state subsidies.

In many countries, more and more people are choosing to produce electricity and/or heat themselves – and to use it. A clever choice – at the latest since the Renewable Energies Act came into force. Not just for the environment. After all, anyone who backs the inexhaustible power of the sun will ultimately save money! By nature so-to-speak. This occurs in two ways:

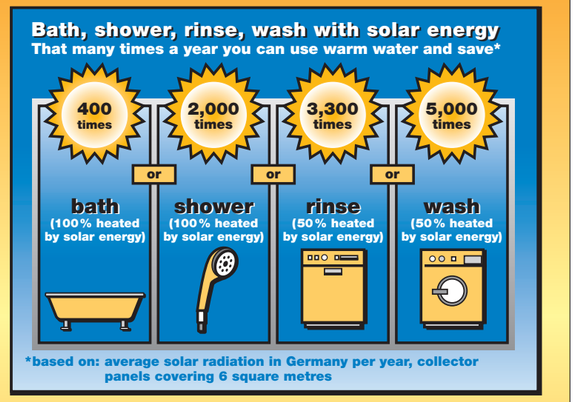
1. ENERGY FROM THE SUN

Almost every house-owner can have a plant installed to generate electricity. At relatively low cost, and it will have not only paid off after 20 years at the latest, it will even yield a profit. This is because the electricity one produces is fed in by the respective grid operator and is remunerated per kilowatt hour. It goes without saying that it is also possible to operate it independently of a grid operator. Especially for houses and business operations outside populated areas this can be a sensible proposition.

2. WARM WATER FROM THE SUN

Generally speaking, almost every household has a central oil or gas heating system. It heats the rooms and the hot water for the shower, bath etc. How would it be if the sun were to take care of this free of charge? The fact is: Anyone who combines his or her heating with a solar system saves up to 60 % of the energy required to heat water per year. From May till September the solar system supplies the heat required on its own.

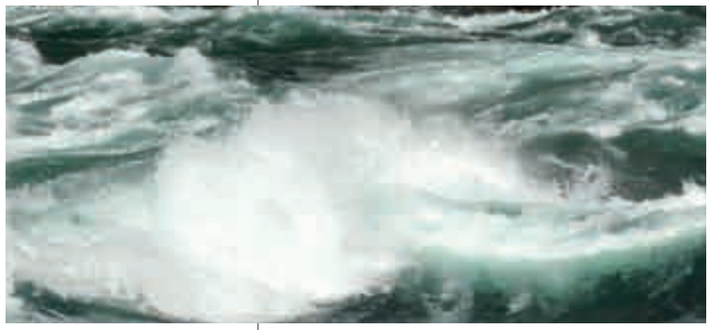
BY WAY OF EXPLANATION:



Clear and detailed information on all aspects of subsidies and solar plants is to be found at www.solarfoerderung.de.

When the sun shines out of the exhaust pipe.

Almost everybody has seen the so-called solar car at some stage. Although they are environmentally friendly, as a permanent drive for all of the cars on the road solar power is quite unsuitable. However, if one may believe most recent research, solar energy may well influence the future of traffic in its capacity as the source of hydrogen for fuel cells. Automotive manufacturers are discussing it as the drive of the future. Hydrogen, which does not exist in the pure form in nature, could be gained from solar energy without any great problem. Bright prospects, even if probably only in a few decades' time. There are still significant technical and logistical problems to be solved here beforehand.



Water power.

Water power plants have proved their worth for decades, even though they represent a major intervention to flowing waters. However the future lies in the sea, not in rivers. Although the first tidal power plants such as the one in St. Malo in Northern France were still relatively temperamental and therefore not really capable of being used on a large, commercial scale, time has not stood still. Today technologies are favoured, which utilise sea currents by means of rotors, similar to windmills. Furthermore, research has been going on for years to find out how the infinite force of the waves can be converted into energy for people.

Geothermal energy.

Also known as terrestrial heat, in Iceland for example, this is how 50 % of the heating energy is recruited. The heat exchanger principle makes it possible to recruit energy from the earth even at temperatures below zero.
In Germany there are also some regions, such as Southern Bavaria or Saarland, which – owing to their geographical characteristics – are suitable for recruiting heat in this way. The community of Unterhaching, to the south of Munich, has already initiated a geothermal energy project which is to be connected to the district-heating distribution system this year.
This is just one of many examples of how the global requirements for heating energy could be secured for the next 100,000 years and more. Completely natural.

Wind energy.

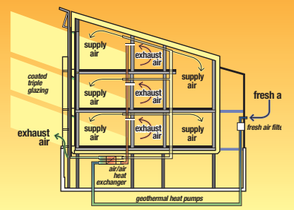
There used to be just isolated exotic specimens – the big windmills. Today they are to be seen more and more frequently. Especially in Northern Germany whole wind farms have been built, which will continue to grow in the future. Top of the list in this field is again – as is already the case with solar energy – the home of Don Quixote: Spain. Nevertheless, the largest independent plant in the world is located in Germany: the REpower 5M. This 5-megawatt plant in Brunsbüttel, Schleswig-Holstein, the rotor of which has a diameter of 126 metres and turns approx. 7 to 12 times per minute, produces a total of 17 million kilowatt hours. Enough power for 4,500 three-person households. And this is by no means all. For irrespective of whether in Lower Saxony or before the coast of Schleswig-Holstein, there are plans for other big plants in the pipeline. Even if some tourist resorts are still complaining about the "mutilation of the environment": In view of the sense in this new energy medium, it would be more apt to call it protection of the environment.

The house saves energy of its own accord.

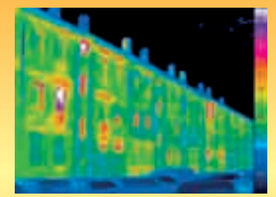
Compared to conventional buildings passive houses require up to 90 % less energy for heating. Two basic strategies are applied for the purpose: On the one hand the prevention of heat loss and on the other the optimised use of free heating energy.
Above all improved windows, facade and cellar insulation and automatic ventilation systems with heat recovery are pillars on which the energy-saving properties of a passive house rest. Here everyone helps with the heating: people, machines, the air. All the air that is emanated is stored. Even the hot air from outside is fed in in summer. And in winter the energy stored in the earth can be utilised via a heat exchanger. An extremely sensitive area in this connection is the joints between windows and the building itself. These transitions between different building materials can – or rather could – easily start leaking.

For handling joints between windows and doors and the building a sealant system specially developed by OTTO is available: OTTOSEAL® A 710, P 720 and S 730. The OTTO system upholds the principle of "tighter inside than out" – the moisture can be drawn off to the outside and no precious heat is wasted.

A passive house is a highly complex system with both structural features, e.g. large glass facades on the south side and electronically controlled fresh air management.



PRIOR TO MODERNISATION



The thermographic images show clearly:
Modernisation greatly reduces the heat loss of the building and therefore in the long run reduces the burden on the purse strings. For more information on passive houses, please refer to www.ig-passivhaus.de

AFTER MODERNISATION

ENERGON in Ulm. A truly pioneering avantgarde project: 8,000 m² of office space in passive house standard.
More at www.energon-ulm.de

OTTONEWS

UNDERWAY ON THE SEVEN SEAS.

Inconspicuous but indispensable; products from OTTO are to be found in the most interesting places in the world. Literally between other exclusive materials. For example in the bathrooms of this luxury yacht, "Callisto" from the Dutch Feadship wharf, everything is of the very best: Crystal glass, natural stone and gilded fittings. The joints were sealed with the hybrid product, OTTOCOLL® M500 in the special colour, honey, because it was impossible to use silicone for technical reasons.

WHERE QUALITY IS LIVED.

Again OTTO in Fridolfing has passed the audit of its quality management system with flying colours. And what's more in compliance with the new, strict regulations of ISO 9001:2000. At the same time OTTO also received confirmation of the environmental management system in compliance with ISO 14001, which was introduced back in 2002. Both standards are globally recognised and are regarded not only as an indicator of the quality and environmental performance of operations, but also as a crucial criterion for the awarding of large-scale and special contracts.
For example for the development of an adhesive for the Ariane-5 space programme, which has to hold what it promised in the laboratory even under extreme conditions; or for a sealant to keep the Wilhelmshaven seawater aquarium watertight. During the 3-day on-site audit the auditors from TÜV Süd appeared very impressed by the open-mindedness of all our staff to all aspects of quality and the environment. After all, it is the employees who make a consistent implementation of the quality and environmental philosophy possible in the first place.

BUILDING TO THE HIGHEST STANDARD.

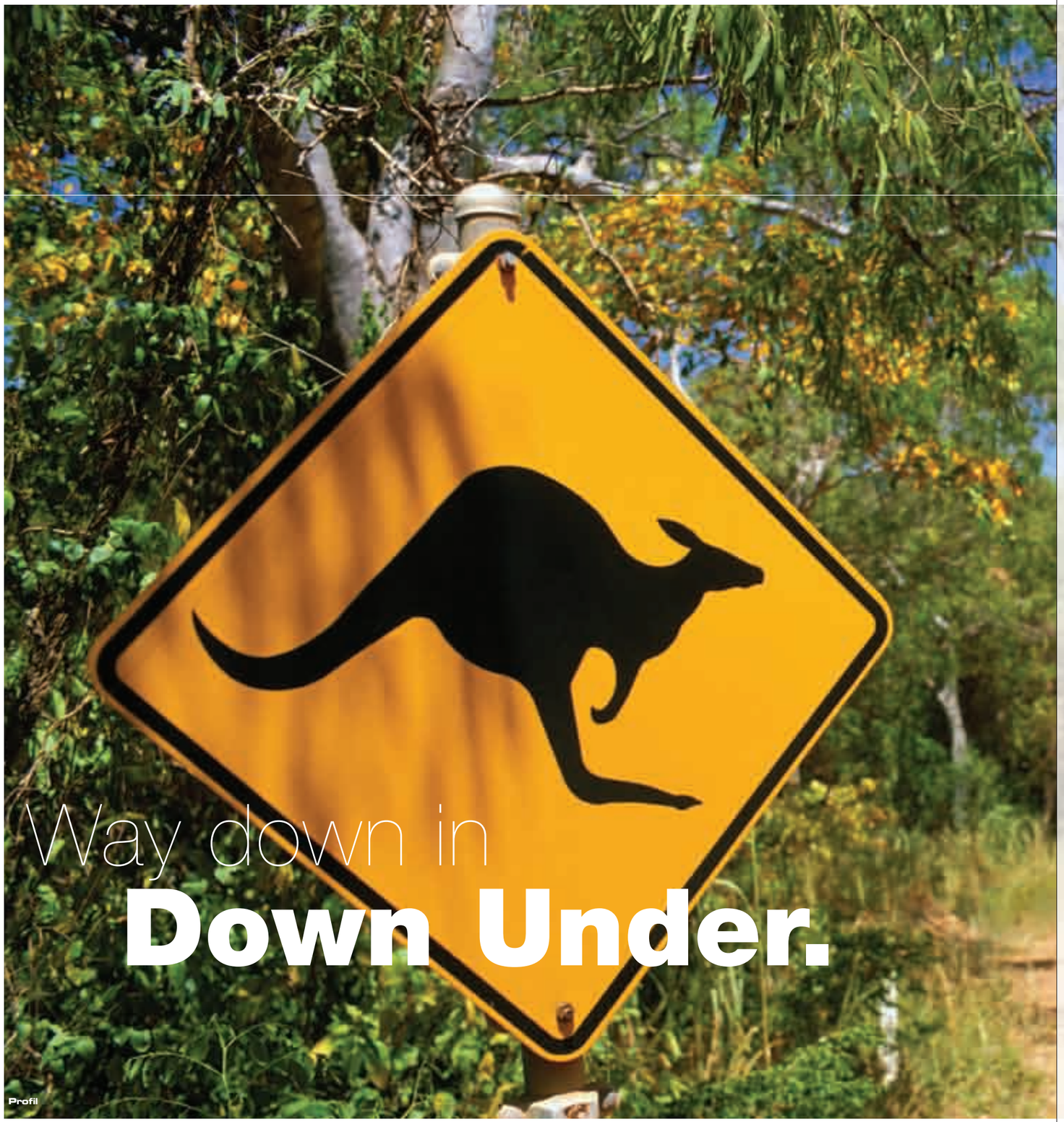
Up to now the highest building in Europe stood in "Mainhattan", which means in Frankfurt am Main. However, at 259 metres, the Commerzbank skyscraper will soon only be number two. This is because in Moscow an office and residential tower is currently under construction, which will measure 440 metres (including the tip of the building). It is to be a magnificent high rise building built in Moscow by the Russian Miramax building corporation with the support of an international team: It is planned for the 87 storeys, which are being erected at a speed of 2 to 3 days per storey, to contain among other things, a luxury hotel, a fitness club with a swimming pool, restaurants and a 20-metre high aquarium through which the panoramic lift will glide.
The German associated architects Schweger and Tchoban are responsible for the overall planning of the "Federazija" (Russian for "federation"). The Chinese Shenyang Yuanda Enterprise Group, facade builders, has received the contract for the facades and, among other things, for this prestige project will be using the special adhesives from OTTO, OTTOCOLL® P 86 and OTTOCOLL® P 520, which in turn are supplied by the Chinese sales partner of OTTO, Mapura in Shanghai.

THE "TRAUMSCHIFF" WITH OTTO ON BOARD.

The MS Deutschland, built in 1998, is the flagship of the German shipping company, Peter Deilmann, and became famous owing to its role as a "floating palace" (Traumschiff) in the TV series of the same name. 175 metres long, 23 metres wide and with 10 decks boasting space for 294 cabins, a saltwater pool on deck, an indoor pool, a cinema, a library and even a golf course, the luxury liner cruises over the seven seas.
And when the guests on this floating five-star hotel come together for the captain's dinner, OTTO makes its contribution to its success. In all three restaurants and in the kitchens, the jointing was carried out with OTTO silicones, ensuring perfect hygiene even if the sea is turbulent.

OTTO GOES SWIMMING.

A really unusual place for OTTO products to be used is in the Traminer sports and adventure pool at Kalterer Lake in South Tyrol. Windows are embedded in the floor of the 3-metre deep pool through which one can watch the people swimming from underneath. The two-component OTTO adhesive Novasil® S 42 was used by company Fischnaller who installed the glass.
Anyone who wants to dive down there themselves and experience OTTO on holiday from an unusual perspective, will find more information here: www.kalterersee.com



Way down in **Down Under.**

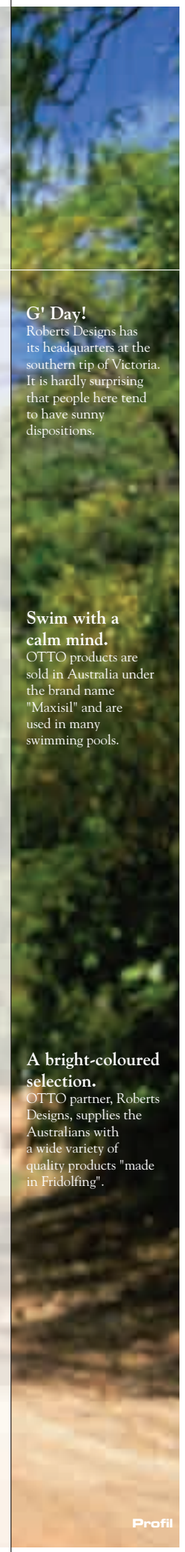
Quality is right at the top of the wish list in "Down Under" too. This is why sanitary dealers Roberts Designs in Victoria/Australia rely on the products from OTTO.

Mammals that lay eggs? The longest fence in the world? Over 95 % of the world's opal desposits? Correct! We are in Australia! But here at the other end of the world seen from here, you not only find Crocodile Dundee, koala bears and kangaroos that hop around the countryside and occasionally upset the road traffic. OTTO is also at home in Australia. Right at the bottom of Down Under, at the southernmost tip of the southernmost province of the continent. To Australians Rosebud may be just a popular holiday resort; as far as OTTO is concerned it is the capital of Australia. Rosebud used to be just a little fishing village, whose romantic name "Rosebud" has a somewhat unromantic origin: It stems from the ship "SS Rosebud" which stranded on the coast in 1877. It is just one example of the laid-back and pragmatic mentality of the Aussies.

For OTTO Roberts Designs covers a territory which, although it is one-and-a-half times the size of Europe, has the least dense population in the world, having only two inhabitants per square kilometre. It makes it all the more important to have a professional partner on the spot, who is familiar with the market circumstances, which differ greatly and not just in terms of geography, from the conditions we know. And although the quality requirements in the land of the pioneers cannot be compared to those in Germany, the "OTTO Ambassador" in Australia communicates the high quality and outstanding processing qualities of the OTTO products, which are offered here under the name of "Maxisil" with great commitment and success. The great variety of colours of the OTTO range, in particular, appears to be very well received by the Australians who are very colourful by nature.

Roberts Designs is the name of the partner here, which originally supplied Australia's ceramic industry with soapdishes and in 2003 took over the OTTO agency as part of a company purchase. Today Roberts Designs functions as importer, distributor and wholesaler for tile cutters, sealingwax, all kinds of tile-laying accessories and: OTTO products.

Within a short time the purely professional partnership between OTTO and Roberts Designs became a sincere friendship, which is refreshed by annual visits. Either in the picturesque atmosphere of the Upper Bavarian foothills of the Alps or on the rugged South coast of the Australian continent south of Melbourne.



G' Day!
Roberts Designs has its headquarters at the southern tip of Victoria. It is hardly surprising that people here tend to have sunny dispositions.

Swim with a calm mind.
OTTO products are sold in Australia under the brand name "Maxisil" and are used in many swimming pools.

A bright-coloured selection.
OTTO partner, Roberts Designs, supplies the Australians with a wide variety of quality products "made in Fridolfing".

OTTONEWS

ACTING FOR THE BENEFIT OF THE NEXT GENERATION: PRODUCTS FREE OF FLUOROCARBON.

Nobody disputes the necessity for active climate protection today. OTTO is acting accordingly. By converting to PU foams free of fluorocarbon it is anticipating planned legislation.
Researchers assume that interference with the atmosphere does not make itself noticed until decades later. It is therefore all the more important to act decisively as soon as the causes and possible consequences for the environment of the future are identified.
A significant first step has already been taken by abolishing the "ozone-killer" CFC (chlorofluorocarbon) as a propellant. The European Union is now planning to prohibit all propellant gases containing fluorine, such as are to be found in, for example, PU construction foams for mounting windows and doors. This ban is to assume legislative form in 2008. Fluorocarbons attack the ozone layer, which is responsible for protecting the earth's atmosphere, significantly less, but their impact on the greenhouse effect is 1,000 times greater than that of CO_2. Furthermore, this type of greenhouse gas is very stable and can remain in the atmosphere for around 50,000 years. Up to now fluorocarbons were necessary to keep the flammability of the PU foams comparatively low as prescribed. In cooperation with its raw materials supplier, OTTO has succeeded in developing PU foams containing no fluorocarbon. They meet all the quality requirements that have applied to date without being more inflammable than before. This enables craftsmen to use PU foams that are more environmentally sound even before the new EU standards take force.

TWO BIRDS WITH ONE STONE: HYBRID ADHESIVES.

Whether one or two-components: Adhesive/sealant combinations are becoming increasingly popular with their users. The advantages speak for themselves.

Today industrial production would hardly be conceivable without adhesives: They make it possible to connect components made from a wide variety of materials fast and over larger surfaces without impairing them visually.

Substantial progress was made and the great significance of adhesive technology became established when reactive adhesives were developed on the basis of synthetically manufactured polymers, such as epoxy resin, phenolic resin or polyurethane adhesives. However, rattling, and therefore annoying constructional elements inside the car demonstrate the limits of these rather brittle adhesives: For applications where strain or one-sided loads can occur more than pure adhesive strength is required. In many fields today modern adhesives have to absorb and compensate elastic vibrations, shocks and knocks in addition to their actual function. So-called hybrid adhesives handle these demands particularly well. Chemically speaking they come roughly between the polyurethanes and the silicones; they unite some of the advantages of both groups without necessarily demonstrating their disadvantages.

Hybrid adhesives are available from OTTO in one-component or two-component form. Owing to the high degree of elasticity and deformation resistance they prevent premature material fatigue of bonds that are subject to dynamic loads. Furthermore, they adhere excellently without any additional use of primers on a very wide variety of substrates such as metals, glass or plastics. An enormous cost-reducing time-saving for those working with them.

The hybrid adhesives are also impervious to the influences of UV and water. Therefore, they can be used for adhesive and sealing purposes virtually without restriction indoors and outdoors: For bodywork and automotive construction, carriage and container construction, metal and apparatus construction, in air conditioning and ventilation technology, in ship-building and many building and assembly applications. The single-component adhesive and sealant, OTTOCOLL® M 500 for example is also distinguished by its almost odourless curing, its food safety characteristics and sheer boundless colour diversity. The primary advantages of the two-component hybrid adhesives from OTTO lie in the consistency and curing time which can be adapted to the respective requirement by changing the mixing ratio.

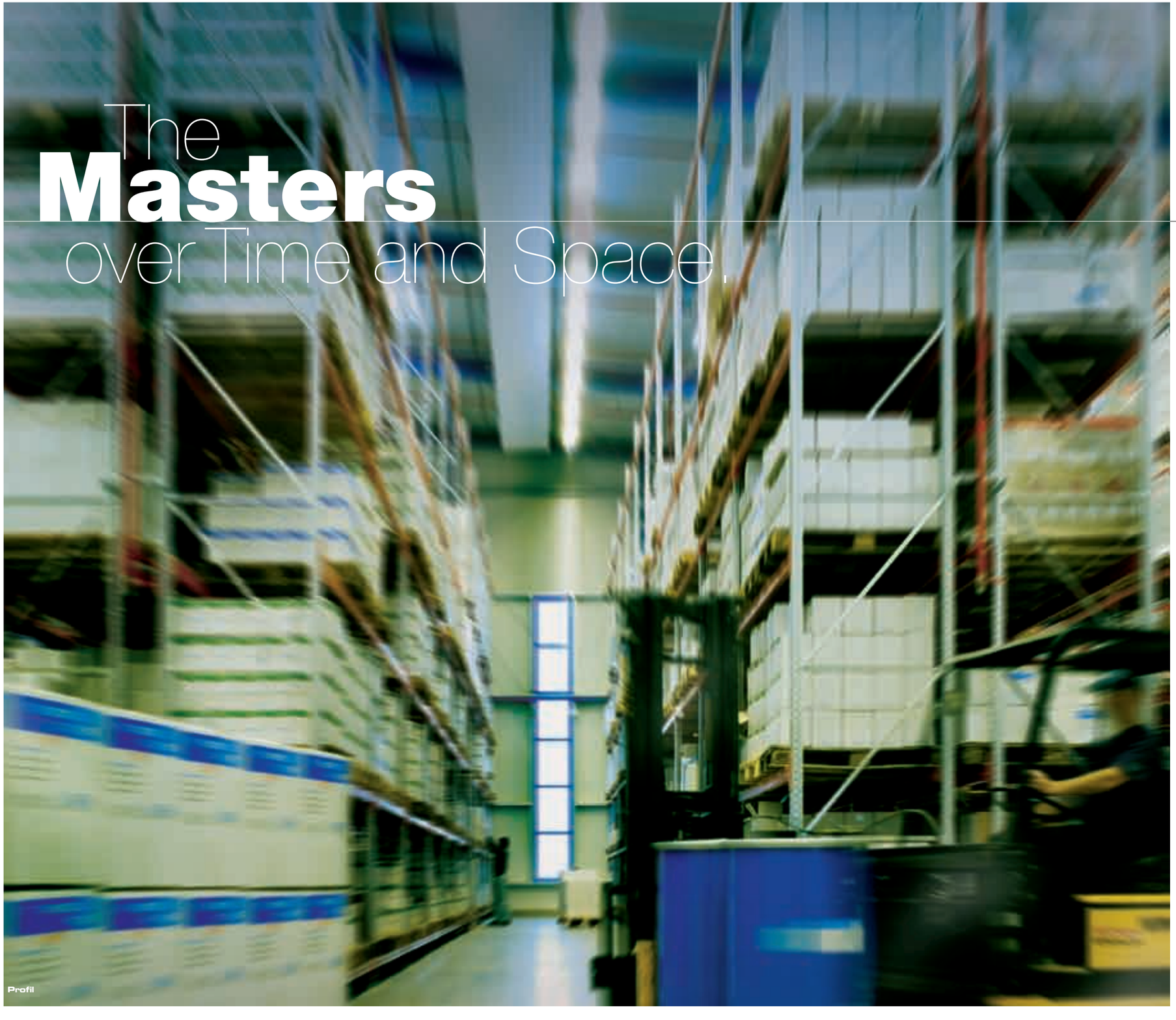
Bonding without rattling.

In the floor strip of AMG, the car-tuning company, individual components are bonded with OTTO hybrid adhesives to prevent undesirable noises from developing when driving.

A SPECIAL KIND OF MEMORIAL.

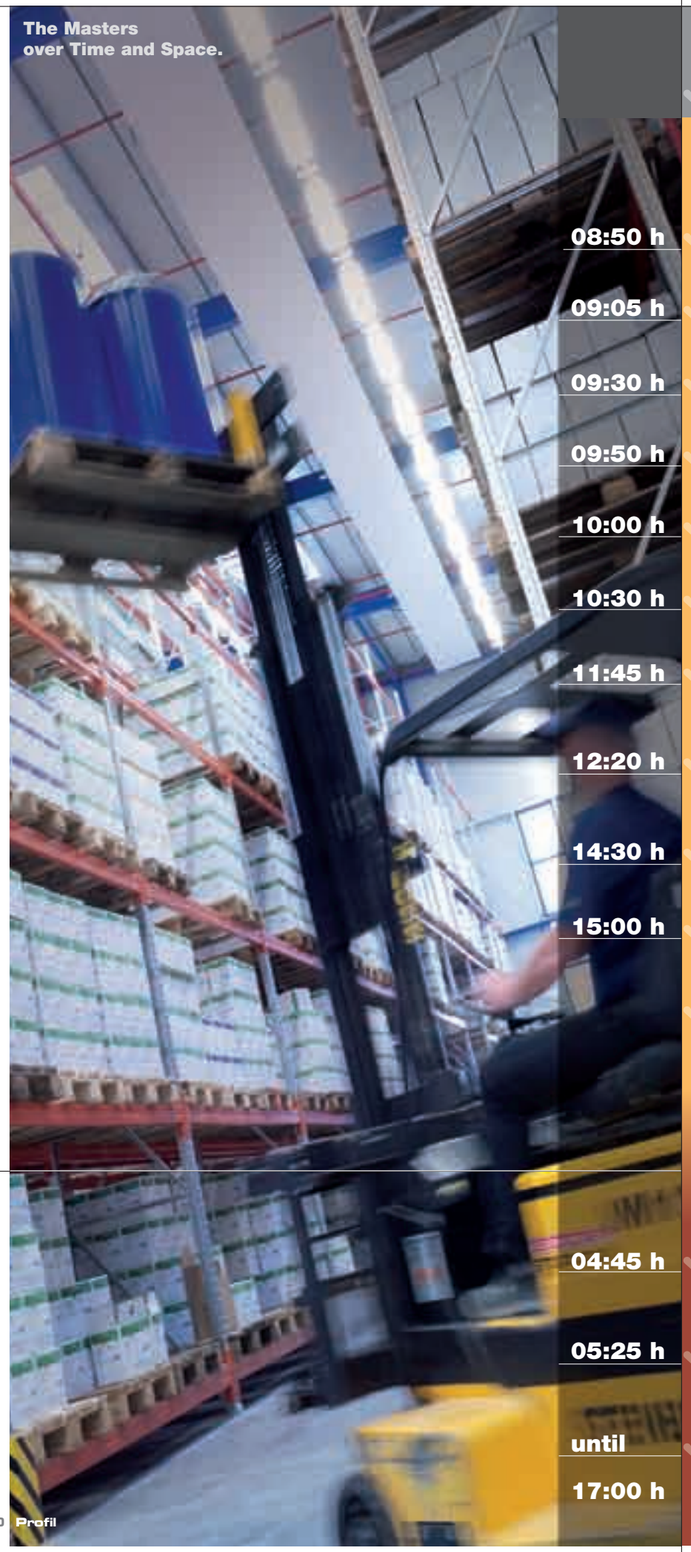
OTTO sealants are to be found in the most unusual places in the world and fulfil their functions without being noticed. For example in Hyde Park in London. This is where the professional silicone for natural stone, OTTOSEAL® S 70 seals the joints of the granite elements of the Princess Diana Memorial Fountain. This oval stone ring, measuring 200 metres around, which is intended to symbolise the life of the Princess of Wales, was inaugurated in 2004 by Queen Elizabeth. The monument designed by the American landscape architect, Kathryn Gustafson, contains two streams of water in "beds" of granite that are fed with water from an artificial source at a rate of 100 litres per second. Children love to use the commemorative fountain to play in and it has long since become a place of pilgramage for Diana fans.

The **Masters** over Time and Space.



The right thing at the right time in the right place. What sounds so simple requires excellently planned structures and storage areas, perfectly harmonised software and for all those involved to be excellently informed. It is called "logistics" and is a central function that affects all areas of the company from procurement to punctual delivery to the customer.

Anyone who has ever had to manage a household over a longer period of time can sing a song about it: How can I organise my shopping so that I do not need to shop too often, but have the most important supplies at home, do not burden the budget inordinately, but get the lunch onto the table punctually in the end? Just imagine this situation with many people involved who assume different responsibilities and need to be organised for a constantly fluctuating quantity of varying products purchased. In our example this would mean that the husband is bringing his boss to dinner, and the children their friends – and all of them have very clear preferences. Welcome to the world of logistics. Logistics is a challenge to every company, irrespective of its size. However, the bigger the company, the more products it has and the longer the value creation chain from the basic material to the final product and the more customers there are, the more complex the whole thing becomes.



Stations of an OTTO delivery to a German customer

08:50 h Order received by OTTO

09:05 h Order captured

09:30 h Forwarded to order inspection

09:50 h Print out dispatch order (stock goods)

10:00 h Order confirmation for the customer

10:30 h Picking and packing the order

11:45 h Weighing and packaging the goods, delivery note

12:20 h Distribution to the respective trailers

14:30 h Collection by forwarding agent

15:00 h Data transmission to forwarding agent

04:45 h Arrival at forwarder's branch

05:25 h Unloading and distribution for the deliverer

until 17:00 h delivery to the customer

Entire company philosophies and strategies have written perfect logistics on their banners and in some corporations their logistics are among the best kept secrets of success. For example in the Nineties top manager Ignacio Lopez caused a stir when he moved from Opel to the competition, VW. The transfer of knowledge this entailed included, for example, a logistics concept that was revolutionary at the time, which was intended to help save significant costs.

Keep it flowing instead of storing it.

In the Nineties "just-in-time" delivery, which had originated in Japan, reached the pinnacle of its popularity. To reduce expensive storage, suppliers were obligated to deliver the exact quantity required for production at the right time. This system streamlines the entire merchandise management in a company, but it necessitates frequent deliveries and an ongoing exchange of information between the company and the supplier. Strikes by forwarding companies or bad weather conditions can hence paralyse entire productions. Another consequence of "Just-in-time": The motorways are burdened with additional lorries. Critics even talk in terms of mobile warehouses, which the companies have shifted to the roads at public expense.

An underestimated factor.

Although the significance of functioning logistics in commercial production and trade has always been undisputed, at the turn of the millennium many Internet firms overlooked the supply and delivery problem complex. Although most of the young company founders had well thought out marketing concepts and technically sophisticated Internet shops, the greenhorn company management often devoted their attention to how the goods were to reach the customer punctually (and not just virtually!) much too late. This is certainly a significant reason for the "dotcom deaths". Today many classic mail order companies have the Internet well under control. And the Internet shooting stars that have survived the market adjustment can learn from the damage suffered by others and from their own mistakes.

Full control.

Logistics is above all a question of information technology, e.g. the right software. Above all the combination of different systems and overcoming interfaces, for example between the dispatching company and the forwarding agents constitute a challenge. In this sector the forwarders and parcel services have raced to catch up technically, and now provide not only fast delivery, but also almost perfect transparency. They have tracking systems which capture every item at transfer points (e.g. by scanning barcodes) and, if deliveries are late or incorrect, it is possible to at least establish where the goods are stuck or where the mistake was made. Furthermore, these data can be monitored via the Internet from a remote location.

"Just-in-time" to the customer.

Even if there is no connection between OTTO and the mail order company of the same name from Hamburg, delivery logistics at the company from Fridolfing enjoys a similar status. In view of the fact that customer satisfaction depends not only on the high quality of the goods, but also on delivery reliability, OTTO has set itself the goal of delivering all products to the customer within 24 hours and immediately after ordering. Clearly, this only applies nationwide in Germany. Apart from the well-established ordering process within the company, this requires an ongoing analysis of ordering behaviour, appropriate production planning and, of course, the delivery warehouse must be filled intelligently beforehand so that it can serve as a buffer. For OTTO goods 24-hour availability is already almost 100 % in place within Germany, for merchandise held for resale it is 98 %. For international deliveries OTTO works with responsible logistics partners and has a sophisticated system so that international customers can be assured of reliable and fastest possible delivery. With its new "Strohhof" logistics centre OTTO ensures that even if demand increases, this approach can be maintained. 2,500 square metres provide space for 2,450 europallets. In the fully automatic small parts warehouse computer-controlled robots find the desired items in no-time; these are then loaded into the lorries by the warehouse personnel via one of the nine LKW docking stations. Tradesmen from the region or big consumers can take possession of their goods over the warehouse-own collection counter. As the new logistics warehouse is over 600 metres away from the OTTO headquarters, a special cable has been laid to guarantee constant, secure data transmission.

The human factor.
Besides perfect computer and control technology, at OTTO, too, people are essential to be able to get the desired goods to the customer as fast as possible.

Everything flows.
At the OTTO logistics centre a fully automated small parts warehouse reduces the storage space requirements and ensures an even more efficient flow of goods.

Facts about the "Strohhof" logistics centre

Hall area:	2,500 m²
Hall length:	60 m
Hall width:	40 m
Lateral hall height:	11.5 m
Capacity of small parts warehouse:	650 europallets
Capacity of pallet warehouse:	1800 europallets
Docking stations:	for 9 lorries
Workforce:	35

Knowledge
is possible.

Human knowledge in its entirety doubles roughly every five years, with this doubling up period constantly becoming shorter.

At the turn of the 19th to 20th century the rate was still roughly 50 years. In 1995 worldwide 7,000 articles are published per day and 300 million magazines and 250,000 different books are printed. Over 640 million radios and TVs supplied the human race with information. During recent years with the advent of satellite TV and the Internet there has been a real knowledge explosion. We are now confronted with tens of thousands of pieces of information every day from when we rise to when we go to sleep. At most we are only able to perceive 3 to 5 % of it. There is no doubt about it, we are living in the information age. Whether this is in fact a blessing or a curse depends on how we use the media to separate the useful from the useless.

Flooding or the source of progress?

In a way information can be compared to water. Too little and we would die of thirst. Too much and we drown. Like water, information must first be developed, distributed and in some cases prepared in order to ultimately represent progress in our life in the form of valuable knowledge. As one of the leading and highly innovative companies in the field of sealants and adhesives, with its knowledge management OTTO assumes an important role in supplying objective and specialist information to the market. Besides complete and comprehensible information about the way the individual products function and their applications this also affects, for example, information about new methods and solutions, their applications and their advantages and disadvantages. In the OTTO information concept classic advertising and the product catalogue are merely one element. In addition to this OTTO has developed specialist literature on fields of activity in which problems can keep on arising or in which tradesmen must anticipate high consequential costs if mistakes are made.

A cutting edge thanks to training.

To make the frequently complex interactions in the effect and processing of the premium products and hence their quality advantages comprehensible and "graspable" in the true sense of the word, OTTO also relies on a training concept. It addresses not only customers, it is also intended for trainees, students and pupils in master classes. Particularly at the vocational, specialist and commercial schools the OTTO concept of teaching expertise first-hand is very much welcomed. For many of these training centres the OTTO courses have already become a fixed part of the curriculum, with which nobody would want to dispense. However, knowledge transfer is not a one-way street. OTTO participates in scientific events and cooperates closely with universities of applied science and others on research projects.

The OTTO training centre in Fridolfing.

Lifelong learning?

This theoretical and practical cutting edge and the investments in the training sector pay off – not least of all for the customers.
Even professionals are astonished when the OTTO training team unpacks its entire adhesive and sealant experience before users and specialist dealers. Frequently in this context incorrect information or acquired improper processing techniques can be lastingly rectified. To date up to 1,400 persons per year have been brought up to date in over 80 individual courses. And these take place all over Germany, in the neighbouring European countries and in the new training centre, which is located very conveniently in a former detached residence opposite the company headquarters in Fridolfing. From 2007 on all of the 20 practice-oriented training courses and seminars in the first six months will take place here.

Training courses

THEORETICAL AND PRACTICAL SEMINAR FOR JOINTERS
The basics of sealants and adhesives in the sanitary and natural stone sector

THEORETICAL AND PRACTICAL SEMINAR FOR WOOD, GLASS AND METAL WORKERS
The basics of sealants and adhesives in window, metal and facade construction, attachment to building structure in compliance with RAL mounting regulations.

TRAINING VENUE
Hermann Otto GmbH, Krankenhausstr. 14, 83413 Fridolfing, GERMANY

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OTTONEWS

A CASE FOR OTTO.

When children are really romping around, nothing can stop them. On playgrounds the "Euroflex" fall protection mats from Kraiburg Relastic ensure that falls from the slide, the play tower or swing do not become a case for the doctor.
The impact-absorbing floor systems guarantee tested and certified (DIN EN 1177) fall protection for fall heights up to 3 metres and therefore provide maximum safety and quality as well as injury protection. Made from rubber with a levelled edge and corners, the individual components are connected by means of a pushfit system, supplemented by surface or end-to-end bonding. For bonding them Kraiburg Relastic recommends the elastic 1-component adhesives OTTOCOLL® P 83 and OTTOCOLL® M 500 in the respective matching colour in order to guarantee long-term stability and safety of the mats, even in heavy duty service.

THE SMALLEST AND MOST INTELLIGENT KITCHEN IN THE WORLD.

Next to vacuum cleaners, for over 40 years it has been one of the most successful products from Vorwerk and is probably known to most housewives (and housemen): The Thermomix, a multipurpose household aid, which is also known as "the smallest and most intelligent kitchen in the world". In the most recent version, the "TM 31", OTTO was confronted with the task of bonding the plastic contact module of the stainless steel pot in such a way that a service life of at least 10 to 15 years can be guaranteed in daily use.
The bond has to withstand strain such as strong vibrations (e.g. when grinding corn), the effects of hot water (in the dishwasher) and high temperatures (during cooking).
After more than 2 years of intensive preliminary trials at Vorwerk and in the OTTO laboratory, the choice fell on the two-component silicone Novasil® SP 4944 for bonding the Vorwerk contact module.
Novasil® SP 4944 has now been used successfully in mass production for over two years. Vorwerk has provided a Thermomix free of charge for display purposes and it can be viewed in the OTTO showroom.

NEW FOR OLD: THE HOUSE WITH A THOUSAND WINDOWS.

According to most recent German regulations, windows must be better sealed against steam diffusion on the inside than on the outside to make it possible for them to be dried off towards the outside without any water penetrating towards the inside. For the major renovation project by the Hamburg Wandsbek housing association on Friedrich-Ebert-Damm, besides plastic windows from Frehse (Reinbek), OTTO sealants were also used. Whilst on the inside the special acrylic sealant, OTTOSEAL® A 710 ensures a watertight finish, on the outside the special polyurethane OTTOSEAL® P 720 has been used to guarantee vapour permeability while at the same time repelling rain. Therefore, in spite of the age of the housing complex, the facade renovation corresponds to the state-of-the-art and the new energy saving ordinance. The architects, Krüger & Urbauch were advised on the materials by OTTO partner, Jörg Northe GmbH.

The new beginning
in the car repair shop.

Like many companies after war the Berlin company, OTTO, had to start again from zero in the West because of the literally "cemented" division of Germany. The present managing partner, Jürgen Lohre, a senior executive of the very first hour and a contemporary witness, has put down his own very personal – and by no means humourless – chronicle of the new beginning of OTTO on paper.

When I applied for a job in sales and marketing in 1961 at Hermann Otto GmbH in Munich, I was impressed by the office address on Munich's noblest street, Maximilianstraße. I was irritated when I found myself in a large lawyer's office. During the interview with Dr. Herbert Nath, a lawyer, it transpired that he was looking for a commercial employee for a firm he owned, which had been founded in Berlin in 1881 as a putty factory. He had inherited the Berlin putty factory in 1932 from his grandfather and in 1954, as a consequence of the political situation, had founded a subsidiary in Munich, which was now to be enlarged. Production was taken care of by a job order producer who delivered the goods to Maximilianstraße where they were filled into tins and tubes in an anteroom – the so-called putty hut. Once a month a student by the name of Hansi was charged with filling the stock into small containers by hand and labelling them. Dr. Nath stated the company turnover to be DEM 66,000.-. I asked him: Per month? His reply: NO, per year! Justifiably I asked him how he would pay me under the circumstances and he replied that he would personally guarantee my salary. My initial gross salary was DEM 700.-. At that time I was 24 and, although as a management assistant in the food industry I had no idea of chemical products, this new field of activities appealed to me. So on November 1st 1961 – one month earlier than planned – I started my job.

I was given an office on the 5th floor of Maximilianstraße 23 and to begin with I was permitted to request an employee from the lawyers' office by the hour who had already processed orders for Hermann Otto GmbH in the past. In the beginning I assumed the task of filling and labelling the tubes and tins with our glass adhesive myself. My first task of setting up a small production was already successfully completed in spring 1962. In Giesing, a quarter in Munich, we rented an old workshop measuring approximately 120 square metres and started to fit the premises with old furniture. The first employee was Mr. Senning who had previously mixed our glass cement at a job order company according to our recipes. To enable us to carry out production ourselves, it was necessary to acquire an agitator. For sentimental reasons we have restored the first blending machine and kept it until today. Now we were able to produce, fill and prepare our glass cements – Forte, Vitrinaplast, Glasaplast and Vitrocoll – for dispatch. In 1965 we succeeded in achieving a turnover for the year amounting to DEM 104,000.- with these products, which we had been able to improve from a technical point of view with the help of a chemist.

The beginning.

At this point in time I was 24 years old and a management assistant in the food industry.

The thing about "Mr. Putty".

As has already been stated, as a company Hermann Otto GmbH originated from the Berlin putty factory belonging to Hermann Otto, founded in 1818. The company logo OTTO-KITTE (OTTO PUTTIES) was adopted although after 1961 we no longer had anything to do with putty. However, the company was renamed as OTTO-CHEMIE for entirely different reasons. Visiting customers all over Germany I handed over my business card with the name OTTO-KITTE, the following frequently happened: The receptionist announced me by the name of "Herr Kitte" (Mr. Putty). Since this happened quite frequently, I soon started searching for a different name for the company. In view of the fact that glass cements and other adhesives can be categorised as chemical products, I decided to rename the company OTTO-CHEMIE. From then on nobody addressed me as "Mr. Chemie", but occasionally as "Mr. Otto". During a sales tour in spring 1965 I offered a wholesaler our newly developed two-component glass cement, Vitrocoll. Since the master craftsman was also convinced by the improved quality, I obtained an order for six packs of Vitrocoll at DEM 22.-. The dealer asked me if I could live off the business; I replied that lots of small and satisfied companies amounted to a pleasing result. On the same journey I visited the major glaziery, Kuball in Hamburg, to also offer our new glass cement. Mr. Kuball was very interested and sent me into the workshop where I presented the product to the master. The master showed me two pieces of glass, which were joined together elastically by a white, rubber-like material and said that if this elastic sealant – known as silicone – really adhered as well to glass, I would have to forget my glass cements. I was so fascinated by this demonstration that I used all my powers of persuasion to get the master to give me his sample. The only thing I was able to find out was that it was a new, injectable silicone material which had been developed by the American company, General Electric. As soon as I arrived back in Munich I showed our chemist, Mr. Hinterwaldner, this silicone sample. He had already read about a development of this type and knew that GE had assigned licences to Bayer and Wacker to manufacture eleastic sealants for the glass sector. At this point it was hard to know what to do! How could I find out more about silicone sealants? My phone calls to Wacker-Chemie received no response. Right from the outset, my boss had shown great interest in further developing the company and was delighted with any progress it made. When I showed him the sample, he was very enthusiastic about the potential a product of this kind offered. I asked him if he might not be able to obtain access to Wacker-Chemie via his Rotary Club contacts. It transpired that Dr. Berg, Managing Director of Wacker-Chemie, was a member. A week later I received a phone call from the plant director with the permit to view an experimental plant. I visited the plant in Burghausen together with Mr. Hinterwaldner, where we obtained information about the potential applications of silicone products. We understood from the talks we had that negotiations were underway with such companies as PCI, Polychemie and Compakta for the building industry and with Perennator and EGO

New Paths.

It took great powers of concentration to coax the master to give me his sample to show to Dr. Nath.

for the glass sector. Other compounders were neither planned nor desired at this juncture. I asked Dr. Hittmaier, works manager at Wacker, the price for the basic equipment for compounding and filling silicone sealants, and it was shockingly high at around DEM 60 to 70,000.-. With a prospective investment of this magnitude I was in great doubt whether banks would make such a high sum available to us. Mr. Hinterwaldner and I drove back with very long faces, discussing the perspectives which might result for us from this new technology. Next day I reported on our visit to Dr. Nath. I told him that the whole project would fail because of funding for the production facilities because no bank would grant us a loan of DEM 70,000.- at an

The future.

He asked over and again: "Lohre are you really convinced that silicone sealants are the key to future prospects for us?"

annual turnover of approximately DEM 104,000.- without any security. Dr. Nath was just as upset as I was. In the days thereafter he repeatedly asked about the possibilities that might open up for our little company and I reaffirmed over and again, that the silicone sealants represented the future. He asked over and again: "Lohre, are you really convinced that silicone sealants are the key to future prospects for us?" And I continued to affirm that this was so. Finally, he said: "If you are convinced of it, the project will not fail because of money. I will submit a guarantee to my bank." The loan was granted and I was able to order our first planetary compulsory mixer and Gehalin filling press. The machines were delivered to Untersbergstraße in Munich at the end of 1965 and are partially still in service today, after more than 40 years. To begin with 2 to 3 batches of 500 cartridges were produced per week. There were only standard colours, such as white, light grey, black and transparent. Scraping off the mixing blade took a lot of strength because the basic mass was very stiff and the cross-linking agents had to be mixed in at the very end. There was no extraction system so that after we had added the cross-linking agent, we had to hold our noses tightly with a handkerchief in order to endure the disgusting amine odours. Since there were no printed cartridges at that time, we labelled each cartridge individually. As a rule Mr. Senning and I produced the cartridges in the mornings, in the afternoons we labelled them, packed them and brought the order to the post office. For me this meant driving back and forth from our office in Schwabing to the production site in Munich-Giesing. By this time we had moved from Maximilianstraße to Potsdamerstraße in Munich-Schwabing.

Silicone sealants? Virtually unheard-of in 1965.

As simple as it was to produce the cartridges, it was exceedingly difficult to sell them in 1965 - 1966. The glass engineering companies were still working with conventional putties and for structural expansion joints and connection joints inexpensive two-component sealants based on polysulfide or polyurethane were being used. When I presented our new "Vitroflex-A" silicone sealant in various enterprises in Munich and the surrounding area, in some cases I met with a total lack of understanding. Why should they suddenly start using an expensive silicone sealant if sealing with significantly cheaper window putty had been working out perfectly well for decades? You can imagine that it took a lot of persuasion. I had thought that this task would be considerably easier! The double (or triple)-glazed windows with insulating glass that had recently come onto the market, which were initially highly sensitive to moisture, with mist developing between the double panes if there was the slightest leaky patch, provided good arguments in favour of a modern sealant system. This helped us to convince the glaziers that at least the external rabbet should be sealed with the elastic silicone sealant. Since we had neither agents nor sales personnel, I initially tried to place adverts in specialist journals to draw attention to the new silicone sealants. Ultimately I was forced to realise that products of this kind can only be sold by being present in person. With the support of some agents we soon achieved the desired success and were able to expand production. In 1968 BASF gave us a presentation of a newly developed acrylate sealant, which we included in our sales programme shortly thereafter. Further contacts with Bayer enabled us to gain access to acetic acid cross-linking silicone sealants. I can well remember the first production trials, when together with a top chemist from Bayer I produced a faulty batch. The entire contents had to be laboriously cut out with big knives.

Manual labour and 5 employees.

In 1970 Dr. Nath invited me to become a partner in the company and appointed me its Managing Director. Bit by bit we increased sales from DEM 400,000.- to DEM 660,000.- at which point we ran out of space. Owing to the low ceilings it was impossible to work with forklift trucks; this meant that every drum and every sack of chalk had to be unloaded by hand and carried into the hall. By this time we had a workforce of five. We also had problems with the heating. We had only one oil stove at our disposal. An incredible state in terms of today's safety regulations, especially since we used toluene and acetone to clean the containers. Luckily, nothing serious ever happened to us. We had to start thinking about looking for new production space in Munich or nearby. Having found nothing nearby, Dr. Nath asked me to look for suitable building land to build a production hall of our own. In the county of Traunstein we were offered a reasonably priced plot at our present location in Fridolfing. In all we purchased 3,000 square metres and immediately started to plan a production hall with offices. Once the financial aspects had been settled – again Dr. Nath helped out with a loan – at the beginning of 1973 we signed the contract with Stahlbau Schmidt. The dimensions of the hall were 15 x 30 m = 450 m^2.

The new beginning in Fridolfing.

In autumn 1973 the long-awaited move from Munich to Fridolfing took place. At last we had space and hence a perspective for the company to grow in the future. Since unfortunately none of the Munich employees was prepared to make the move to Fridolfing, I was forced to look for new manpower. Ms. Heller supported me in obtaining former employees of Heller & Spindler. The first of the employees from Fridolfing were Ms. Stöckl and Ms. Obermaier. Ms. Heller was engaged to work part-time in our office. Luckily my first employee, Mr. Senning from Munich was prepared to help familiarise the new colleagues at the machines in the first few months. Since in spite of all the cost-cutting measures imposed by Dr. Nath, our funds were very tight, we initially did without oil central heating for the offices and the recreation room and tried to bridge the first winter by using electric heaters. However, we had to pay dearly for this cost-cutting measure because it was almost impossible to heat the rooms beyond 19 °C. At the beginning of January 1974 I engaged our first employee, Mr. Otter and as an additional person for dispatching goods, Ms. Handlbauer. Dr. Nath visited us every Tuesday to see the progress and to discuss important personnel and investment matters. In 1974 the company occupied five persons including myself. When Ms. Heller gave notice in 1974 we were lucky to be able to employ Ms. Heidi Wimmer as our secretary. With one interruption for maternal leave, Heidi Wimmer has now been with the company for more than 30 years.

The first million.

In 1975 we hit the turnover threshold of one million DEM for the first time. On April 12th 1976 we engaged Mr. Ralf Tabel as our first fully-employed sales representative. Mr. Tabel immediately began to work in the glass sector in Southern Bavaria for us. His success showed that I had been right that visiting the customer and giving expert advice is decisive in gaining new customers. For decades we invested every mark we made in the company. Since sales were developing astonishingly, we were able to employ Mr. Josef Mayer from August 1976 for production. Mr. Mayer still works in the compay, today in the position of head of the dispatch department. On July 1st 1977 Mr. Rudolf Bippus took up his position as book-keeper, taking much of the burden of the commercial work off me, enabling me to take better care of sales. Mr. Karl Korte joined the company on April 1st 1978 to take care of customers in Northern Germany and canvas for new ones. He worked for the company until he retired in 2004. What I was really lacking was a hardworking sales manager, so in 1978 I engaged Mr. Klaus Macco. A brilliant salesman! I could tell so many stories just about this man. It was thanks to him that we managed to raise our sales from DEM two million in 1978 to DEM five million in 1980. In the same year we engaged Mr. Günter Fiene also as a travelling salesman for the Ruhr district. The constantly rising sales made it necessary to order our next planetary compulsory mixer, which was able to produce double the quantity. Up to then the raw materials were delivered in 50 kg hobbocks. By purchasing floor scales we were able to convert to purchasing in containers. This made it possible to empty out polymers and softeners through an aperture in the

The new beginning in the car repair shop.

The historical review by the managing partner, Jürgen Lohre.

floor. This in itself was already a significant step forward and brought about cost savings when purchasing raw materials. In 1980 things became too crowded for us in the manufacturing hall because the growing quantities of packaging and the stock on hand took up too much space. Therefore we decided to build on a new hall to store raw materials and finished goods. We were able to rent a hall in Götzing, a district of Fridolfing, for the packaging materials. At the end of 1980 our majority shareholder, Dr. Herbert Nath, died completely unexpectedly. A great loss for all of us. I lost a fatherly friend and partner who had supported and encouraged me for years to the best of his ability. His eldest son, Mr. Herbert Nath jun., also a lawyer, assumed his position. We got on well straight away and were able to continue the deveopment work we had begun together with great success.

The new planetary compulsory mixer made our work very much easier although it was very difficult to clean.

The thing with the Tanker.

We took possession of the dispatch hall in 1981 and again we thought that we would have plenty of room for a long time to come. We were very wrong. While travelling I saw many tankers and this gave me the idea of using second-hand tankers for storage purposes. I was lucky: A freight company in Burghausen had a tanker for sale. We purchased it for DEM 10,000.-, had the chassis removed and supports mounted and installed it in the new dispatch hall. So now we had our first tank depot with a capacity of approx. 24 tons. These storage tanks enabled us to purchase raw materials at a significantly lower price with tanker delivery by Wacker-Chemie and Bayer. After we parted with our sales manager, Mr. Macco, we were again on the lookout for a capable successor. Mr. Nath put us in touch with Mr. Klaus Seebauer from Prien. He began working as sales manager on October 1st 1981. He threw himself into his job with great enthusiasm. Thanks to his unrelenting efforts, sales doubled between 1982 and 1985.

A new group of customers: The domestic appliance industry.

At the end of 1982 Mr. Helmut Schnee applied for the job of laboratory operator and plant manager. He started working as technical manager on January 1st 1983. In view of the fact that at that time we had no laboratory, a suitable workplace had to be found. In the new storage hall we partitioned off a room – today it is the workshop – and installed a laboratory office. Thanks to his former work in a laboratory he contributed valuable suggestions for optimising recipes and for the production processes to the business. Since we were operating in the building and finishing business only, thanks to Mr. Schnee, we were able to move into a completely new special field, which had been inaccessible until then. So adhesives and sealants for the domestic appliance industry were developed and successfully distributed. Therefore we now had a further leg to stand on and were more independent of the seasonal economic situation in the building industry.

Turnover stimuli from innovative sanitary sealants.

When in 1984 Dr. Pyrlik from Hanse-Chemie presented a new polymer softener to us, it opened up countless options for us to start up activities in the tile and building materials trade. This target group had shown us the cold shoulder for years because, like others, we had only been able to offer standard products. Furthermore our range was too small because we had no other products in our programme for the trade. This raw material brought us many advantages. We therefore decided to develop a new sanitary sealant based on this raw material and to offer it under the name of "Fugendicht-Silicone" and to offer it specifically in the tile and building material trade. Our decision to manufacture this sanitary sealant in all sanitary colours was a crucial one. This was a novelty because at this time the competition was also only offering six to eight colours at most. We had hoped to meet with great interest in these special colours and were totally amazed that the tile trade suddenly started to order whole pallets of our standard colours in addition to the special ones. Our "Fugendicht-Silicone" product proved a resounding success, which became market leader in this sector – also because of its unique product properties. This success caused our sales in the years 1984 - 1999 to rise from DEM 11 million to DEM 96 million. An achievement we owed to excellent teamwork and – not least of all – to our loyal employees.

Team spirit – the best of all bonds from OTTO.

In the course of past years our highly qualified laboratory personnel, headed by Dr. Steinkirchner and Mr. Auer, developed new and interesting adhesives which made it possible to solve many problems in the building and finishing trade as well as in industry. In 1998 Dr. Volker Weidmann was appointed Managing Director and in the year 2000, Mr. Johann Hafner. Our young directors and their personnel are highly motivated and eager to lead the company to further successes. And the fifth generation of the founder family, in the person of Mr. Matthias Nath, an economics graduate, has been in the company for three years now and we are pinning our hopes on him to ensure its continued success and development. Today OTTO is one of the leading manufacturers of top grade sealants and adhesives for professional use. The company employs 270 persons and in 2006 achieved turnover amounting to approximately 62 million Euros, almost 30 percent of which was abroad. Last year the company celebrated its 125th anniversary and we hope that many successful years still lie ahead of us.

The new beginning in the car repair shop.

Contemplating how to solve our storage problem I was reminded of the many tankers I had met on my travels throughout Germany.

On Her **Majesty's** service.

She is Head of State in Great Britain. She is one of the most colourful personalities of our time. And she is not just 007's boss: Elizabeth Alexandra Mary Windsor. Better known as Queen Elizabeth II.

When the incumbent British monarch was born on April 21st 1926 the likelihood of her ever ascending to the British throne was almost nil. She was too far down in the line of succession of the Windsors. Today she is "Elizabeth II, by the grace of God Queen of the United Kingdom of Great Britain and Northern Ireland as well as her other countries and territories, Head of the Commonwealth, Defender of the Faith." This is her full title.

And strictly speaking, one could also add "OTTO-CHEMIE from Fridolfing in Bavaria, Purveyor to her Majesty Queen Elizabeth II."

Although he is not a member of the royal family, company founder David Bywater of BY DESIGN, OTTO's partner in London, managed to establish his own family business and to expand and strengthen it over the years. The passionate hobby diver turned his hobby into his profession and specialised in underwater jointing. This was his admission ticket to Buckingham Palace. The Queen's residence has a swimming pool as well as various ponds, fountains and small lakes. BY DESIGN takes care of keeping the artificial royal waters nice and watertight. And David Bywater knows that he can always rely on products from OTTO. The speciality products from OTTO have even found their way into the bathroom of the late Queen Mum.

Moreover, he has even managed to secure a contract with the Corporation of London, placing his skills are the disposal of the city. And rightly so, as can be seen from a few extremely interesting projects.

The future is underground.

408 km of track, 275 stations and twelve lines running between them. That is the London Underground. The oldest and still the most extensive underground railway network in the world. Where the first underground line was opened for steam locomotives on January 10th 1863 today, up to 3 million reach their destinations every day. During the rush hour this amounts to up to 142,000 passengers per hour. From a purely technical point of view even 315,000 would be possible. And this superlative capacity will probably be topped in the future.

The British Government has committed itself to invest a total of 16 billion pounds by the year 2030. Thanks to BY DESIGN, OTTO is involved here, too. "Working for the London underground has always been a real challenge; especially because of the strict health and safety regulations. Not just since the danger of terrorism has started to rise", David Bywater says. "Nevertheless we have succeeded in signing an agreement for the OTTOSEAL® S 54 special silicone to be used. In all underground stations in London. This is because the product has overcome all test series with excellent results."

It goes without saying that results such as these are also very pleasing for the parent company in Germany. At OTTO in Fridolfing we are repeatedly amazed at the fields into which the products sometimes advance. In future things are certain to continue to move upwards with BY DESIGN. Even if this means working way down underground.

Holidays, the sun, sandy beaches: wonderful! But after the refreshing swim, when you get back to your towel it is always the same: the sand clings to your skin as if you were a Kentucky Fried Chicken. But why does it happen? And how does "bonding" actually function? Can water be used as an adhesive? Question after question! Reason enough to deal with the subject of "adhesion" and "adhesives" in greater detail.

The miracle of **bonding.**

In Germany today there are around 30,000 adhesives on the market, most of them for specific industrial applications. Per capita some six kilos of adhesive are produced. However, adhesives are not a human invention and most certainly not one of our time. In nature there are many examples of applied adhesive technology and no fewer natural adhesives. For example, insects such as termites or wasps make use of the principle of adhesion to build their nests. Tar, resin, rubber, casein or bone glue are other forms of natural adhesives which, next to mechanical methods, mankind started to use very early on in evolution, e.g. for building tools.

Bonds and how they work.

Although adhesives are very much taken for granted today, the way they act is a complex process with regard to chemical and physical interactions. Adhesives are defined as non-metallic binding agents, which act by means of adhesion (adhesive power) and cohesion (internal strength). In this process – to express it in rough terms – physical and chemical connections arise between the adhesive and the parts to be joined with one another. For optimal adhesion it is important for the adhesive to interlock as tightly as possible with the surfaces to be joined, so that the molecular bond can act properly. You can even observe this with the very weak "adhesive", water, which when loads are distributed unevenly, can enter purely physical bonds with diverse surfaces in its molecules. For example a thin film of water, like a tiny magnet, causes the shower curtain to "stick" to the skin. The strength and stability of an adhesive is determined primarily by the chemical bond and often by the formation and cross-linking of long molecular chains during curing.

The substitute for screws, welding and rivets.

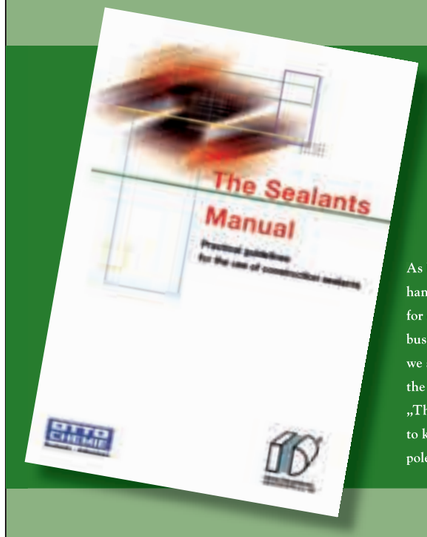
Today adhesives play an essential role in households, industry and the trades. They facilitate connections, constructions and new materials, which would not be possible if other mechanical techniques were employed. In automotive, marine and aircraft construction adhesive bonds have prevailed over conventional methods such as welding or riveting in many areas and have thus brought about numerous improvements:
They ensure that tension is distributed and power transmitted evenly over the entire bonding surface and are effective under static and dynamic loads. By contrast with welding or riveting there is no danger with adhesives that the surface and structure of the materials bonded can be changed: optimal in terms of appearance and the aerodynamic property of the surfaces. Because of the bond over the entire surface and the elasticity of the adhesive the vibration damping quality of an elastic bonded joint is better than with a welded, screwed or riveted connection. Furthermore, adhesives are particularly favoured for lightweight construction because very thin parts can be joined together. In the case of thermal jointing processes this is problematic if not impossible. Apart from the pure adhesive property adhesives can also serve as sealants for gases and liquids, as is often the case with silicones. Adhesives join different materials and prevent undesirable side effects owing to their electric and thermal insulation, for example contact corrosion when steel and aluminium are combined. Moreover, an adhesive-bonded joint does not need the workpieces to be modified and in many cases can be reverted without damaging them.

The future of adhesives.

Materials researchers and applications technicians are forecasting a great future for adhesives in almost all spheres of work and life owing to their diversity, their properties and their advantages over other technologies. They stand for easy-to-create, reliable, unproblematic and fast joints. Even traditional sectors with a mechanical and craft orientation have recognised the opportunities the adhesive technology can offer and are beginning to open up to these innovations. As a manufacturer of top quality adhesives OTTO provides industry and the building sector with a wide assortment of special products for a wide variety of applications and materials. The customer benefits above all from consistent, purpose-oriented further and new developments and from the conveyance of knowledge of application techniques.

OTTO-CHEMIE
A success story

The story of OTTO-CHEMIE – a story of cuttting-edge technology and the people behind. A story about courage, passion and the ambition to lead the field with innovations.
Learn more how the success started on page 26 of this magazine and be one of the lucky few to win the valuable handbook „The Sealants Manual“ issued by the Industrieverband Dichtstoffe e.V.



As being a standard handbook and a must for every well-run business in the industry, we supply you with the latest edition of „The Sealants Manual“ to keep you in pole position.

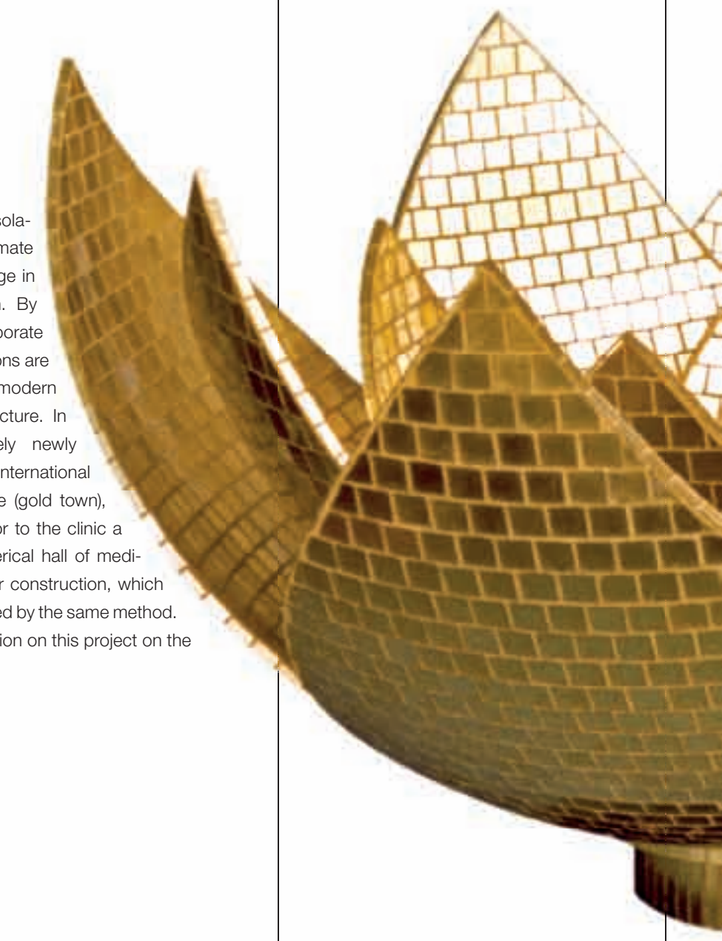
YOUR CHANCE TO WIN

20 LUCKY WINNERS WILL RECIEVE ONE FREE ISSUE BY SIMPLY RETURNING THE FAX AND ANSWERING THE QUESTION BELOW CORRECTLY.
Closing date will be March the 31th, 2008. As a hint: If you read the article „The new beginning...“ starting on page 26 carefully, answering the question will be a breeze.

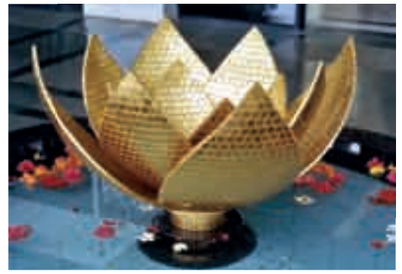
Which innovative products became the key to success of OTTO-CHEMIE in 1965?
A) Wax sealants
B) Polyurethane sealants
C) Silicone sealants

Fill in the right answer on the attached fax sheet and send it to **+49-8694-908-519** or by regular mail to **Hermann Otto GmbH**, **Krankenhausstr. 14**, **83413 Fridolfing, Germany**.

Only the **best** for the **eyes.**



This fountain sculpture in the form of a lotus blossom stands in front of the entrance to the "Aravind Eye Hospital" in Pondicherry, South India – the biggest eye clinic in Southern Asia. It consists of stainless steel plates that have been bonded with some 3,000 gold tiles from Bonke Mosaics using OTTOSEAL® S 100, colour “curry”. The tiles themselves are produced from glass with 24-carat goldleaf by means of the patented sandwich method. The glass tiles are gilded and the stainless steel plates bonded by local workers in very exacting manual processes. Owing to the choice of materials the tiles are absolutely impervious to outside influences such as rain, acid or chlorine and hence they can set accents in a wide variety of areas.
In Hinduism and Buddhism the lotus blossom symbolises purity, Creation and spiritual revelation; gold symbolises truth. The fountain is intended to give relatives and patients of the hospital courage, consolation and animate them to engage in contemplation. By the way, elaborate gold applications are traditional in modern Indian architecture. In the completely newly planned and international town, Auroville (gold town), right next door to the clinic a gigantic, spherical hall of meditation is under construction, which has been gilded by the same method. More information on this project on the next page.



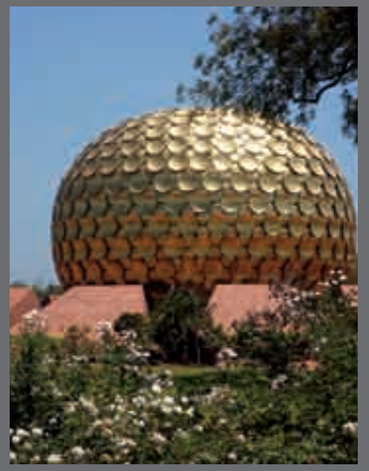
The gold leaf is laid painstakingly between the glass tiles by hand and is then pressed (sandwich method).

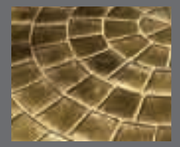
OTTONEWS

TRANSPARENCY IN MATTERS OF DESIGN.

In the Seventies they were the trendy building material par excellence. Long since forgotten, today they are experiencing a unique renaissance: glass bricks. With the final return to the classics of the Seventies, architects are also becoming aware of them. And thanks to their diversity and the variety of colours, they have survived until today.
The visual airiness, the only 3-millimetre wide joints and the simple and reasonably priced mounting thanks to the plug-in connectors from STECKfix of Kiel, all contribute towards their growing success. And all of this with the possibility of discovering new facets in terms of design. At STECKfix, the special glass-brick silicone, OTTOSEAL® S 28, provides the necessary transparency. It facilitates extremely narrow joints and guarantees maximum processing reliability. Hence, the glass brick joints are sealed absolutely tightly and at the same time, provide sufficient space for any compensatory movements; thanks to the high elasticity of OTTOSEAL® S 28, which even withstood an earthquake test in New Zealand.

AT THE CENTRE OF A WORLD OF ITS OWN.





In South India, near Pondicherry a project is located which is probably unique worldwide: it is the international town of Auroville. It is a community of 2,000 members from a total of 35 nations, who have made it their mission to create an urban model of unity between human beings and of international understanding.

What initially sounds a bit like a 1968 commune or a sect, is – when looked at a little closer – interesting rather than exalted. For people of all nations living together with equal rights has nothing to do with unrealistic, crazy ideas in Auroville. It is based on the integral yoga of Sri Aurobindo. And this orientation has no other objective than to connect material and spiritual realities with one another.

Since the subject of "bonding" is a central concern of OTTO anyway, one can also find the company from Fridolfing in Upper Bavaria represented in Auroville in Southern India. For at the centre of this unique multidimensional and multicultural experiment, which has received confirmation by UNESCO, by the way, is the so-called "Matrimandir". A spherical, spiritual building, but not a temple as such; it is not a question of religion. Rather it is a space to help intensify self-experience and concentrate on oneself. Without any diversions. It is designed entirely for self-exploration.

Viewed from the outside, one can already divine this phenomenon. For the architecture gives one the impression of constant visual movement. This is achieved by 1,450 golden discs on the outer skin, which reflect the sun differently, depending on the time of day. On each golden disc thousands of 5 x 5 cm glass tiles with ingrained gold leaf shimmer.

When one finally enters the centre of this sphere, one comes into the so-called inner chamber. The meditative heart of Auroville. Here again in this piece and quiet is OTTO. OTTOSEAL® S 110 was used for the joints of the golden tiles. However by contrast with Auroville itself, this product is by no means an experiment; it is a silicone sealant, which is excellently suited for such projects. It soon becomes clear that the combination of reality and spirituality also characterised the master builders.

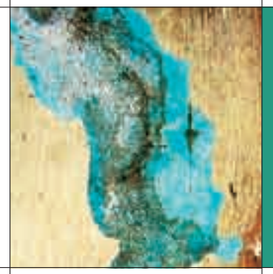
BRING UP THE HOSES!

The dimensions of this mobile large-scale aquarium are tremendous: 12 metres long and 2.5 metres wide and high, it holds 7,500 litres. The size corresponds to the standard of a 40-foot container. This mobile aquarium – filled with water or used as a terrarium – is deployed for a wide variety of exhibitions, most recently at the Federal German Horticultural Show in 2006. In this case the Verband für Fischerei und Gewässerschutz Baden-Württemberg (Baden-Württemberg association for fishing and water protection) brought what is inclined to be foreign territory for "normal" people a little closer to the visitors: the indigenous underwater world and its many species of fish.
Obviously, a simple adhesive or sealant would hardly have sufficed for a project of this kind. On the one hand, owing to the water immense forces act on the panes of glass and, on the other, enormous strain during loading and unloading of the casing have to be compensated. Furthermore, the adhesive and sealant must meet another criterion: non-toxicity for fish in compliance with OECD Guideline 203. The Novasil® S 47 two-component silicone from OTTO meets these requirements and was successfully tested by a well-known institute with a chemical and biological labratory to establish its harmlessness. A fact that hobby fish breeders are already well aware of because Novasil® S 47 is frequently and gladly used on domestic aquariums with normal dimensions.

THE GREEN ISLE, CLEAN ROOM.

Ireland is above all world famous for two products: Guiness, a bitter, dark beer and for dairy products. However, over the past 20 years Ireland has succeeded in having top modern companies with innovative product settle, which can hardly be ascribed to the Green Isle cliché. For example the German pharmaceuticals Group, Altana, which operates a state-of-the-art cleanroom production facility. For the company appointed to implement it, Viessmann Cleanrooms from Hof an der Saale, this was the biggest cleanroom project in its company history up to then. In the new cleanrooms, which cover 3,000 square metres, pharmaceutical products – primarily drugs in tablet form – are manufactured. It is understandable that these rooms require absolutely smooth, even surfaces. They must be free of pores and micro fissures, with coatings that never release any particles and with a minimum number of sealant joints. The latter must be as smooth as possible, easy to clean and, of course, free of particles. A suitable product for this purpose is the special plastic and cleanroom silicone, OTTOSEAL® S 64. However, there were also other reasons for Viessmann Cleanrooms to choose this special OTTO product. Not only is it extremely easy to apply and to smooth, the colour options were the ice on the cake. The most popular colour: "stainless steel". After all, a cleanroom should not only fulfil its purpose, it should also look accordingly. Like all of the 10,000 running metres of joints made with OTTOSEAL® S 64 in Ireland.

Unobstructed Growth of Uninvited Guests



Infestation with mould is a problem affecting almost every building these days. It is usually discovered by tenants or residents. They report it to the house owner. And the search for the guilty party begins immediately: The owner-builder or the engineering company, the sealant manufacturer, the sealant, the person who applies it, the state with its reglementations, or could it be the tenant him/herself? It is hard to find a straightforward answer to this question. But there are ways and means of preventing mould formation. On the part of all concerned.

Where does it come from? Where does it go to?

From the point of view of biology mould belongs to the fungus family. There are 250,000 species in the family and around 50,000 of them belong to the subspecies, mould. They belong among the absolutely natural "inhabitants" of our planet – all the way through to the outermost regions of the atmosphere. As individual spores in the air they do not constitute any great danger. Only if they find the right breeding ground, they become established there and often spread out unobstructed. And such a breeding ground is soon found. Because mould needs no light and little oxygen to grow and the spores are quite satisfied with a perfectly normal temperature in living quarters of around 20 °C.

Many of these microorganisms like it best when the air humidity is above 80 %. This is no problem in bathrooms, kitchens and frequently also in heated or inadequately ventilated rooms. One of their "favourite places": expansion and connection joints in sanitary areas. Infestation is usually identifiable from a dark, punctiform and slowly expanding mark on the surface. Therefore, correct jointing contributes to preventing mould infestation. The surface of the sealant must be finished in such manner that no moisture can collect or accumulate. This applies in particular to joints in the floor and floor-to-wall area as well as to the lower glazing joint. In the form of the professional products, OTTOSEAL® S 70 and S 100, OTTO provides exactly the right thing. The smoothing agent, which is used to clean off the sealants should be used as sparingly as possible so that little residue remains on the sealant. Equally, normal domestic cleaners, which are sometimes used as smoothing agents, are not very suitable in this instance because they leave more residue rich in nutrients and organic residue, which serve the mould as a source of nutrition.

The sealant manufacturers will therefore furnish the sanitary silicones used for this purpose as well as many building silicones with fungicides. Fungicides belong to the microbiocide group and are capable of killing moulds or at least obstructing their growth. It sounds as if this is the solution to mould infestation. Unfortunately it isn't quite! Owing to the requirement for physiological harmlessness, these fungicides may only be added to the sealant in small quantities. And they have to be soluble so that the mould can absorb them with the nutrition; and precisely this is a problem: The action time is limited. This means that these fungicides cannot ensure certain protection over a longer period. Once time has caused the fungicide to be washed out or consumed, new "settlers" are fast to arrive.

What should be done once they arrive?

Therefore, besides perfect processing, it is above all correct room hygiene on the part of those living in the premises that is crucial to prevent the mould from becoming established. A simple remedy: Rinse the joints well after showering and dry them. It is sufficient to use an old towel or a normal rubber blade, as for example on a window cleaner squeegee. To be quite sure, it is best to use OTTO Anti-Mould spray, which should be rinsed off with clear water after the required application time. Furthermore the surface can be treated with an alcohol solution (70-80 %, e.g. methylated spirit in water) for subsequent disinfection. And then there is just one more thing to make sure that the mould has no chance: ventilate, ventilate, ventilate.

Joints subject to a high chemical, biological, physical or mechanical load are maintenance joints according to DIN 52460. They include joints exposed to a heavy water load, a large amount of dirt and frequent cleaning cycles (e.g. wet rooms, underwater areas, hospitals or commercial operations). These joints must be checked thoroughly once a year in order to combat the mould.

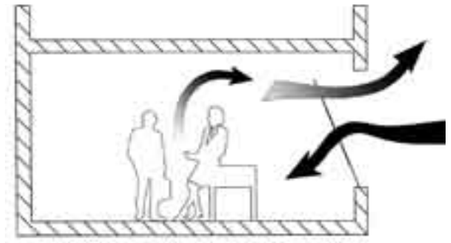
GIVE THE MOULD AIR.

Ensuring a good room climate by regular ventilation is then the responsibility of the user. This is assuming that the joints concerned have been carried out expertly, preferably by a specialist company. The room air is burdened by the occupants with carbon dioxide, odourous substances and steam. At a relatively high degree of air humidity, steam can condensate in spots where the temperature is lower than that of the air. For example in the corners of rooms or by the window. However, many people do not know how and when they should best ventilate. So here again are the most important facts relating to the subject of "ventilating".

Ventilate – but properly!

VENTILATION VIA ONE WINDOW.

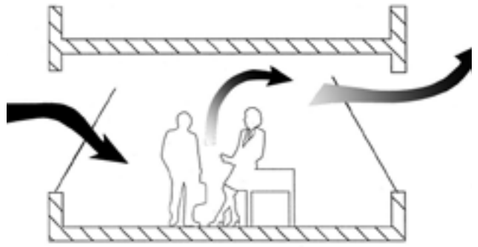
When rooms are ventilated through a window the fresh and spent air flows in and out again via the same window. This form of ventilation is customary and is practised in general. The volumetric air flow through the window in this case depends on the free cross section, the temperature differential and the wind speed. When practising inrush airing, the casements are wide open. Slow airing (via tilted windows) requires a much longer period of time for the same air exchange and can therefore cause high energy losses.



One-sided ventilation of rooms through one window.

TRANSVERSE VENTILATION.

Among other things transverse ventilation makes use of the difference in pressure between the side of the building facing the wind and that facing away from in. The fresh air flows in on the one facade side and the spent air flows out of the other side of the facade. Transverse ventilation facilitates the fastest and most effective air exchange in rooms.



Transverse ventilation.

WHAT IS SUFFICIENTLY LONG VENTILATION?

The optimal ventilation time depends on the season. Cooler air from the outside contains less moisture than the warm room air. If the outside air is heated in the room, it can absorb additional moisture. Owing to the big difference in temperature between outdoor and indoor air in winter, a very fast and effective air exchange takes place, i.e. the greater the difference in temperature, the greater the capacity for absorbing the moisture from the inflowing outdoor air. Generally speaking one can state the following typical values for ventilation times if ventilating on one side:

December to February	5 minutes
March and November	10 minutes
April, May and September and October	15 minutes
June, July and August	25 minutes

To remove the humidity from the living quarters, the rooms must be ventilated via the windows several times a day, depending on how they are used.

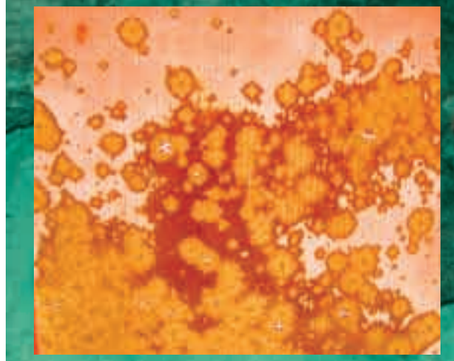
SPECIAL CASE: THE BEDROOM.

Compared to other rooms bedrooms have the highest relative air humidity. This also implies an increased danger of mould formation. To keep the window in a tilted position at night is a good form of ventilation from the point of view of mould prevention. However, this involves energetic disadvantages and the ambient conditions often do not permit this kind of ventilation. As a rule there is the possibility of ventilating afterwards accordingly the next day to prevent mould formation. Early in the morning it is necessary to ventilate additionally with the window wide open for about 30 minutes. If it is not possible to ventilate additionally until the evening, the time has to be doubled.

Source: VFF (Association of window and facade manufacturers) leaflet ES.05: 2004-01.

VENTILATION OF ROOMS WITHOUT WINDOWS.

Another tip: The air exchange in bathrooms and kitchens without windows must be ensured in the form of indirect ventilation. For example by means of blowers installed in ventilation shafts. In view of the fact that these ventilators are often coupled with the light switch, it is important to know that the period spent in the bathroom is not sufficient for an optimal air exchange. The ventilation should remain on for longer.



Health hazards from mould.

Once the mould has become established in our living quarters – and if it is not identified and eliminated soon – it can cause long-lasting damage to health, such as:

- **Allergies**
- **Respiratory diseases, even including asthma**
- **Rashes**
- **Sleep disorders**
- **In the worst case even pollution in the form of carcinogenic substances that form in some types of mould.**

So it is a very serious subject and demands your full attention.

"Each customer can have a car in the colour of his choice. As long as it's black."

Henry Ford

All a question of physics?

Actually colours are nothing but light wave ranges that are reflected by different surfaces, perceived by the eye and registered in the brain. So colours actually come into being in the head. Maybe this is why they are a matter of taste, and primarily a question of individual and traditional experiences. Undisputably colours trigger associations, memories and emotions. Therefore they are used in art, architecture and communication as the most important creative factor.

Colour is effective.

The popularity and effect of certain colours clearly distinguishes them from one another. While red, for example, has a stimulating effect, shades of blue are calming, which is why people used to like to use them in designing bedrooms. It is not only human beings who like or hate certain colours. It is said that flies avoid blue-coloured rooms. There are differences of opinion when it comes to interpreting green. While some see nature and growth in it, to others it stands for sickness and poison. By the way – in spite of its timelessness and popularity with designers – black does not count as a colour at all. In view of all the different inclinations and preferences for colours, it is hardly any wonder that for decorating houses – inside and out – all colours are in demand.

Colourful all the way to the joints.

The time when elastic sealants were only available in shades white, grey and black have been over for a long time. The wide variety of colour design options in modern building applications have prompted the sealant manufacturers to provide customers with an equally versatile colour range as already exists for wall paint, tiles or mineral grout. For example, OTTO supplies OTTOSEAL® S 100 premium sanitary silicone in a total of 74 different shades of colour that are constantly available ex-warehouse. However, there are also applications for which the standard colour selection is not sufficient. Therefore OTTO offers a customer-oriented solution: the special colours.
With very few exceptions, special colours are available for all adhesives and sealants from OTTO, i.e. for approximately 60 different products. For OTTOSEAL® S 100 there are over 220 additional shades of colour, which have been stained especially to meet customer wishes.

What customers want.

Owing to the large number of colour design options, it is absolutely impossible to have the optimal matching shade available for every conceivable application. If we take the example of a special natural stone which is to be laid on the floor of a bathing landscape: For an application of this kind it is important for the colour of the sealant to match the natural stone as closely as possible. Since this cannot always be guaranteed with the 35 standard colours of the OTTOSEAL® S 70 premium natural stone silicone that are constantly available, the customer requests a special shade of colour for this application. Because each natural stone is unique, the matter of a matching shade cannot usually be settled on the phone and the customer is asked to send a sample of the relevant natural stone to OTTO.
When it reaches Fridolfing, first of all a small trial mixture is prepared with OTTOSEAL® S 70 in the company's own colour laboratory. By comparing the sealant and the sample of natural stone directly, the colour can be adjusted so that they match as closely as possible. The results of this experimental approach are recorded and passed on to the applications technology and development department for the relevant shade to be released. If desired, before the shade of colour is released for actual production, the customer receives a sample. If the shade is not satisfactory, a new test mixture will be made in order to meet the customer's wishes exactly. If the shade of colour matches exactly and has been released by the customer, a recipe is prepared as a basis for the actual production of that special colour.
During the entire production of a special colour, the personnel in the colour laboratory constantly check that the sealant matches the sample released by our customer. Before the special colour sealant can be delivered, like all OTTO products, it must pass the release test. This involves checking the technical properties, such as skin-formation time, homogeneousness and the shade of colour. Equally, sample cartridges of this special colour are stored to be absolutely sure that if the customer orders it at a later date, it will be possible to supply exactly the same shade. This is the only way to adhere to the high quality standards of OTTO. Only when all release specifications have been met is the finished product released for dispatch.

The challenge: coloured 2-component silicones.

A further challenge for special staining are the two-component adhesives and sealants. The product, Novasil® S 42 is used for example for fixing glass panels onto aluminium frames, flush at the front, in the colour to match the respective frame. This entails coordinating two product components in different colours in such a way that after mixing the A and B components, the desired shade of colour is created. The sealant and adhesive can be matched with the component to be processed in terms of colour and no longer has to be concealed behind expensive printing on the rim of the glass pane. This offers planners and architects completely new options for designing, for example, interior partition walls, facades and other constructions made with glass.

Three to four special colours are produced exactly according to customer wishes at OTTO on each working day. If they can be implemented from the technical point of view, the potential special colours that can be produced range from structured colours, transparent hues to almost all of the RAL, HKS or NCS shades.

Colours as symbols →

RED → Blood → Fire → Energy → Heat → Love → Passion → Eroticism → Sin → Danger → Life → Joy → Shame → Anger → Aggression → IN POLITICS → Left-wing policy → Socialism → Communism → Revolution → IN CHINA → Happiness → SIGNAL → Forbidden → Stop → Negative → Wrong

GREEN → Grass → Nature → Unripeness → Poison → Environmental movement → Hope → Peace → Freshness → Fertility → Creative force → Sensuality → Envy → ON FLAGS → Islam → AS A FACIAL COLOUR → Sickness → SIGNAL → Permitted → Present → Start → Okay → Correct → Poisonous → IN CHRISTIANITY → Colour of Resurrection

BLUE → Water → Sky → Freedom → Cold → Aristocracy → Distance → Yearning → Loyalty → Knowledge → Philosophy → Resilience → Moderation → Harmony → Equilibrium → Calm → Sympathy → Satisfaction → IN POLITICS → Democracy → Republic → IN THE CASE OF ISRAELITES → God → Heaven → Faith → Revelation → SIGNAL → Prescribed

OTTONEWS

OTTO GOES UNDERGROUND.

Enamel is a material that has far greater potential than merely to decorate nostalgic bowls. Underground it is secretly on its way to new triumphs.

OMERAS from Lauter in Saxony manufactures tiles from the supposedly venerable material, enamel – and is opening up new realms with it. For example as facing for tunnels. Fire-resistant, easy to clean, almost indestructible and straightforward to apply. Especially with the right adhesives and sealants from OTTO, which can even be selected to match the respective colour.

Enamelled panels from OMERAS are not only to be found in tunnel facings. This material is also used for the facing of underground railway stations all over the world, for example in the U5 in Berlin, at Sui Hong Station in Hong Kong or at the Chinatown Station in Singapore.

More information about enamelled facade elements from OMERAS is to be found on the Internet at www.omeras.de.

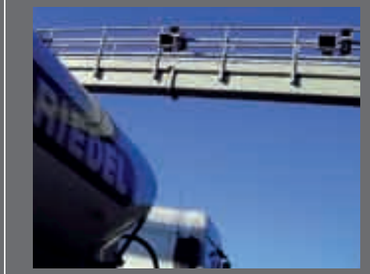
THIS IS HOW WORK IS DONE – WITH CERTAINTY.

Only a few decades ago occupational accidents in industrial plants were an almost everyday occurrence. It is not that working with such machinery today is not dangerous. But a good deal has happened in the field of occupational health and safety. A company from Fürstenfeldbruck near Munich is partially responsible for this.

Leuze lumiflex GmbH can claim to be one of the technological leaders in the field of opto-electronic safety technology. This includes, for example, so-called safety light curtains. These are light beam safety devices that prevent a worker from touching a dangerous part of the machine with his hands.

In device housing manufacturing processes plexiglass strips have to be bonded onto a powder-coated aluminium section. In the past double-sided adhesive strips were used for this purpose. "The weak point of this system was to make it watertight against splashing water" according to Mr. May of Leuze lumiflex. "Together with OTTO we have however succeeded in eliminating the problem." OTTOSEAL® M 350 has made it possible to create an invisible bond seam that is capable of meeting the high requirements of industrial safety standards. At the same time, with the aid of a dosing system the hybrid sealant can be applied so exactly that processing can take place fast and efficiently.

A MOVIE STAR – QUITE UNINTENTIONALLY.



Anyone who doesn't stick to the law on Austrian motorways can easily become a "movie star". Kapsch TrafficCom AG makes sure of this. From its headquarters in Vienna Kapsch operates worldwide and has developed sophisticated systems that can not only register toll delinquents, but also chase them.

The Kapsch TrafficCom VR-2 is an access control and license plate identification system with fully digital triggering. If a lorry, which has not paid the toll fee, passes the system a photo is taken – of the vehicle itself and of the license plate. It is so reliable that even under difficult environmental conditions and with maximum traffic loads, each lorry can be identified unambiguously.

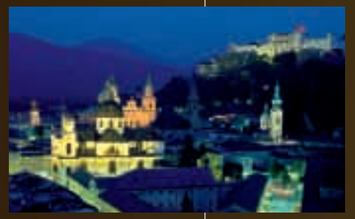
There is only one problem: Cracks used to form frequently at the joint between the protective glass in front of the camera lens and the metal housing. Kapsch contacted OTTO because of this type of damage. The solution: OTTOCOLL® M 500. The hybrid adhesive and sealant with very good water and UV resistance passed all the Kapsch tests with flying colours – and is now being used on Austria's motorways. Possibly also on a few more pretty soon – the next contracts for equipping the motorways in Rumania are already in preparation.

Stores away more than mere wings:

Red Bull Hangar-7

The name is almost misleading. After all, one normally imagines a big, not necessarily attractive repair hall when one thinks of a hangar at the airport. If company founder Dietrich Mateschitz – a man with a sense of beauty and dimension – had not initiated the Red Bull Hangar-7.

Ancient, noble city with a modern landmark.



Have you ever seen Salzburg by night?

Red Bull Hangar-7: outstanding.

Glamorous view up to the firmament.

Of course Getreidegasse, Mozart's birthplace, the Large and Small Festival Halls and, last but not least the fortress enthroned high up above the town. All this epitomises Salzburg for many visitors. However, since August 2003 there is another highlight: the Red Bull Hangar-7 at Salzburg Wolfgang Amadeus Mozart Airport.

The reason for the building is extremely simple: The Flying Bulls, an enthusiastic and curious troupe of pilots who have devoted themselves to the conservation of historical planes and helicopters needed a new home for their impressive collection. And their owner, Dietrich Mateschitz, renowned for unconventional solutions and ideas, dreamed up the concept for the Red Bull Hangar-7.

It soon became clear that the hangar was going to be more than an aircraft museum. The Salzburg architect Volkmar Burgstaller took charge of the planning phase in 1999. In a little over a year building began in January 2001. At the very latest after the festive inauguration in August 2003 it was finally to be seen: The Red Bull Hangar-7 has the stuff to become the modern emblem of the airport, if not of the city of Salzburg itself. Of course, the numerous historical aircrafts on the inside represent a certain power of attraction in themselves. As do a few Formula 1 racing cars. Hardly astonishing in view of the fact that Red Bull is meanwhile involved in the Formula 1 circus with two teams. Yet the most impressive aspect is actually the perfect symbiosis between the expressive, modern architecture and the trendy, fascinating life going on inside. The Red Bull Hangar-7 is a perfect combination of art gallery, gastronomy, experiential venue and, yes of course, an aircraft hangar.

The view within.

Even at a distance it is obvious that the Red Bull Hangar-7 does its proprietor full credit. Just as the adverts claim that Red Bull "gives wings", the Red Bull Hangar-7 presents itself in the form of a wing which, thanks to its striking shape, distinguishes it visually from its environment directly opposite the main airport building.

Just like a real wing, the Red Bull Hangar-7 was subjected to intensive wind tunnel trials. And despite this extraordinary form it conforms to the strict flight safety regulations in every particular.

With an apex of almost 15 metres, it is 67 metres wide and approx. 100 metres long. These are considerable outer dimensions in themselves. Once one is on the inside, one enters the 1,400 square metres of space in the two cylindrical indoor towers. Looking out, the wing assumes the form of an impressive firmament. Just as if one were seeing it from inside an aircraft.

Tons of impressions.

The magnificent impressions are made possible by 1,200 tons of steel and 380 tons of specialist glass. Not a single piece is present in duplicate in any way. Every single piece of steel and every piece of glass is unique. This is a result of the complex structure of the overall building. The building work is not only a challenge in the planning; primarily it is a logistic challenge. Every single piece had to be delivered punctually to the place in which it was needed. The fact that this construction with its curious appearance is stable in itself, that one can admire the exhibits from aviation, Formula 1, art and culture in this extraordinary context and that one can then enjoy culinary delicacies that are no less exceptional in the bars or the Ikarus restaurant, is naturally attributable primarily to the design engineers and tradesmen. In a way OTTO prepared the ground for this unique building and the aircraft. This is because the OTTOSEAL® S 70 premium natural stone silicone was used for the natural stone joints.

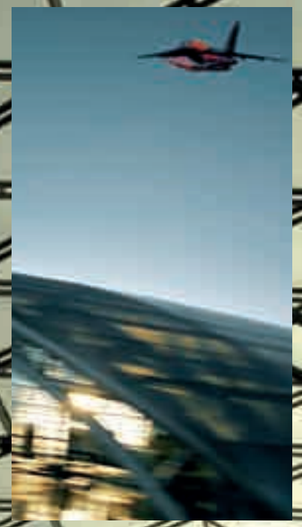
Space for art, culture…

…and hot racers.

Soaring and spirited - just like...

...the link between visionary technology...

...and elevated thoughts.



Pleasure for all the senses: Culture and cuisine "en detail".

Thanks to its unique concept the Red Bull Hangar-7 has already become a really upbeat meeting place. Hardly surprising! After all, apart from the gourmet restaurant, Ikarus, which serves both select and highly creative delicacies prepared under alternating top chefs, there is a variety of bars and lounges to provide the appropriate ambiance.

For example the "Threesixty Bar" is suspended directly under the ceiling of the hangar way up above the planes. It can only be reached via a narrow gangplank. Once arrived on this "Island in the air", the glass floor gives one the constant feeling of being or rather floating above things.

For those who prefer things more "down to earth" can have a good time in the "Carpe Diem Lounge Café". Whether for breakfast or just for a coffee, visitors can always expect "somewhat different" delicacies. Flown in from all over the world.

The kitchen follows the crazy (in the most positive sense) concept of the building. The same applies to the big events that take place at irregular intervals. Because they all have to satisfy one principle: Content, topic and aspiration must harmonise with the general idea of the room and therefore primarily with the extraordinary world of the Flying Bulls.

What else does Salzburg have to offer? A whole lot!

It goes without saying that the city of Salzburg does not live on the airport and the Red Bull Hangar-7 alone. Especially in the Mozart Year, 2006, the crowds were even bigger than ever. If you wander through the wonderful old city yourself you will soon understand why. The numerous markets, herbalists and women binding spicy bouquets or the world famous Getreidegasse...

Nighttime impressions...

Salzburg stands for: Exceptional flair, modern boutiques, young fashion, classic designers, traditional costumes – all of this is to be found in a genuinely unique setting on or in the direct neighbourhood of the Getreidegasse. The great charm of days gone by comes alive here. And if you ultimately enter one of the traditional coffee houses, the bustle soon drops away from you. Be prepared for pure enjoyment.

... everyday hustle and bustle...

Besides, Salzburg Fortress, the Cathedral and many other cultural highlights invite you to undertake extended, interesting tours. The same applies to various concerts and theatre performances. There is something for all tastes – from classic to modern. Everything has the charm of a small town that is capable of achieving big things. It would be best if you formed your own impression. Either by visiting it (by car, rail or plane) or beforehand on the Internet at www.salzburg.info.

...and peaceful awakening.

By the way: If you should be popping in to OTTO some time, plan an excursion to the Mozart city at the same time. It only takes 20 minutes from Fridolfing to Salzburg.

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