

igus® dry-tech® bearings ... don't lubricate

iglidur® ...



plastics for longer life® ... igus

on tour

www.iglidur.eu/30

Around the world with polymer plain bearings from igus®:

A small car is setting off on a great journey

Triboplastics – great potential in the automotive sector

For 30 years, the Cologne-based plastics specialist, igus®, has been firmly committed to researching, developing and continually optimising iglidur® tribo-polymers for industrial applications. With over 12,000 products, igus® offers the world's broadest range of friction-optimised polymer plain bearings. The 40 iglidur® standard materials make the company a key player in the field of "motion plastics®". igus® has established itself as a proficient automotive industry supplier; 50 percent of igus® bearings are now used in cars. From seat and convertible top systems through multi-joint hinges and engine compartment components to chassis applications – the potential uses for polymer plain bearings in vehicles are almost endless.

The practical test: A trip around the world



To mark the 30th anniversary of iglidur® bearings, igus® is therefore setting out on an adventurous round-the-world trip to demonstrate the high performance of its plastic products. A small car has been retrofitted with iglidur® plastic components and is setting off on a global expedition under the motto "igidur® on tour". The journey will take it across four continents and three oceans; mile upon mile of tarmac, gravel, dirt and mud through rain, searing heat and snow.

The tour can be followed online at
blog.igus.eu/igidurontour
facebook.de/igusDE

Reports, videos and photos will provide exciting insights into the "igidur on tour" journey.



First-time fitting with iglidur® components

Step #1: The major retrofitting

In the Cologne University of Applied Sciences students are working under the instruction of Johannes Thomé to get the car ready for the trip. Over the course of four weeks various parts of bearings in the car were replaced by igus® parts.

Our car for "igidur® on tour" stripped off!

In the course of the retrofitting weeks the car was totally dismantled. During the first step it will be lifted so that the engine can be lowered and examined. Simultaneously the modules that have been already dismantled are going to be examined closely too. In cooperation with the German Technical Control Board (TÜV), igus® employees investigated which parts are replaceable.

Thus the question that arises is "How can they be replaced best?"

To prepare the car for the start of its trip in February, bearing points have been replaced in the following areas:

- seat adjustment
- brake pedal
- gearshift
- hand brake
- window lifter
- convertible roof pivot points
- windscreen wiper
- throttle valves
- alternator

All in all there are 56 igus® bearings being built in.

igus® advantages:

- Weight
(7x lighter than metals)
- Cost effective
- Customised shape

To avoid risking the TÜV approval, it was not possible to retrofit safety and crash-related bearings in our small car. These particularly include all bearings in the chassis, brake system and steering but also in the hinges and seat systems. igus® polymer plain bearings can generally be used in cars and other automotive applications and are ideal for replacing metal plain and roller bearings, especially from a weight perspective.





Step #2: Cologne final preparations

9 January was a key date for the conversion team at the School of Applied Sciences in Cologne and igus®: TÜV inspected the converted vehicle. The keenly anticipated message came after an exhaustive inspection: the certification was granted and the tour could get under way.

The official send-off was celebrated at a major press event in the new factory building in Cologne. 50 journalists gathered detailed information about the replaced bearing locations and the tour. A live video feed to the colleagues in the tour's first destination country, India, provided an impression of what our vehicle will need to contend with.

Directly from Cologne, the car's first trip with our tour guide, Sascha, went to Frankfurt/Main airport, from where the car was flown directly to New Delhi/India the next day.



After the press event in Cologne, the trip proceeded directly to the airport in Frankfurt.



Our colleagues in India presented the tour itinerary in India via live video feed.



The TÜV conducted an exhaustive inspection on all converted bearing locations.



The car passed through customs directly after arriving in Frankfurt.



The last time in Germany for the time being. The compact car shortly before being loaded onto the plane.



Only a few minutes later, and our little car had disappeared in the belly of this enormous aircraft.



50 journalists and many other guests followed the call to Cologne and were in attendance when the car was sent on its way to the long trip.

Where you can find igus® in ...

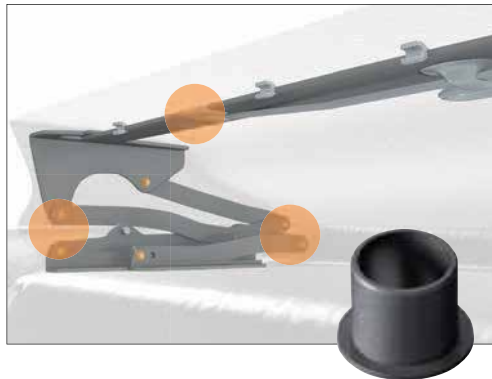
... and why?



Seat systems – adjustment / adjusting lever

iglidur® J replaces lubricated plastic bearing made from POM

- Noise-free operation
- Simple, captive assembly
- Low bearing clearance due to tolerance compensation during e-coating
- Tolerance compensation at e-coating
- Also runs on simple cold extruded parts/tubes
- Lubrication-free



Convertible top – operation and sealing

iglidur® G replaces lubricated, fibreglass-filled PA6 polyamide bearings and metallic plain bearings

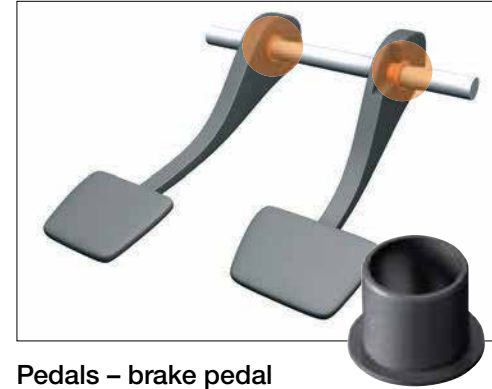
- Resistant to corrosion
- Also runs on cold extruded parts
- Low bearing clearance due to tolerance compensation during e-coating
- Simple, captive assembly
- High compressive strength
- Lubrication-free



Hand brake – Handbrake lever

iglidur® G replaces lubricated steel-steel-mount without bushing

- No rattling
- Silent operation
- Easy installation
- Lubrication-free



Pedals – brake pedal

iglidur® G replaces lubricated glass fibre filled PA6 polyamid bearing

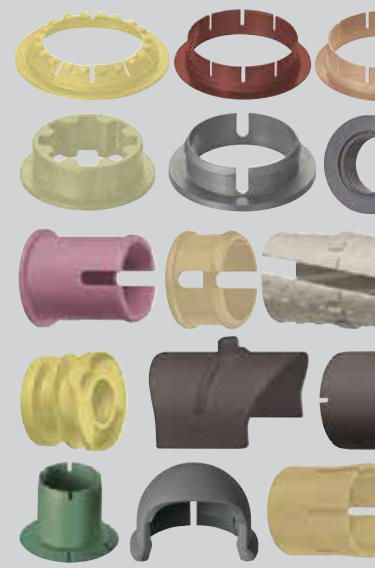
- Rattle-free
- Noise dampening
- Tolerance reconciliation through radial pretension
- Lubrication-free



Gearshift – Selector lever

iglidur® P210 replaces lubricated plastic and steel bushings

- Also runs against fibre-reinforced plastics
- Low bearing play
- Pleasant haptics
- Lubrication-free



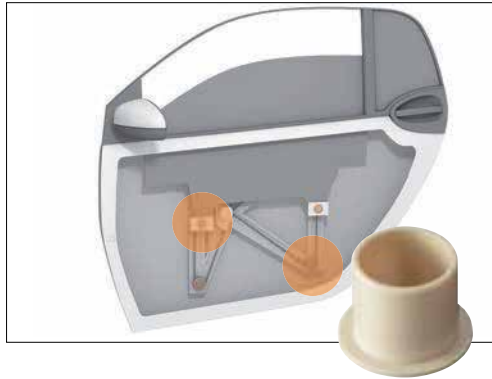
igus® advantages

- Weight (7x lighter than metal)
- Cost effective
- Individual moulding



Where you can find igus® in...

... and why?



Window lifter

igidur® J replaces lubricated plastic bushings made of POM

- Lubrication-free
- High wear resistance
- Noise-free operation
- Easy installation



Alternator – V-belt tensioner

igidur® G replaces metal plain bearings

- Vibration dampening
- Resistant to corrosion
- Wear resistance under sustained pivoting



Windscreen wiper mechanics

igidur® J260 replaces lubricated brass and plastic bearings made of PA66

- Resistant to corrosion
- Dirt-repellant
- Media-resistant
- High alternate bending strength
- Best price/performance ratio
- Lubrication-free



e-chain® solutions for automobiles for the continuous supply of energy and signals in on-board systems

System E2 micro for

- Tailgates
- Sliding doors
- Seat adjustment
- Window-operating mechanism
- Interior mechatronics
- Windscreen wipers



Throttle valves

igidur® X6 replaces PTFE-coated aluminium bushing

- Plastic shafts possible
- Media-resistant
- No contact corrosion
- Low priced

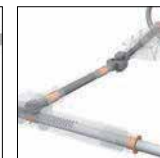
Benefits of igus® e-chains®

- Stable (100% more additional load 25% and more unsupported length)
- Quiet
- Rapid assembly (10 x quicker to open)
- Modular system

Further potential bearing points in the vehicle



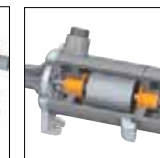
Hinge systems



Steering system



Gears



Water pump



Undercarriage



Brake caliper



Step #3: India the adventure begins

The big adventure begins. After endless hours at customs in New Delhi, the car can finally start its tour on the roads of India. The car traveled more than 5,000 km from New Delhi in the North to Bangalore in the South, while visiting more than 80 customers.



Start at the „AutoExpo“ trade fair in New Delhi. Our converted iglidur® compact car was a crowd pleaser.



Stop-over at a cloister in Chennai, Southern India, with breath-taking views.



We visited more than 80 customers in India, ranging from smaller firms, such as PWS, a machinery manufacturer for the food processing industry ...



... to the largest Indian automobile manufacturer, TATA, in Pune.



Taking a break at the Bay of Bengal along the Indian East Coast.



Countless attractions were located along the route, such as the pink city of Jaipur.



Indian traffic bustle and constant honking. At times, driving in India will test your patience.



Heat and sand in the Indian desert present no problems for the iglidur® bearings.



Below palms along the West Coast.



A donation was made for every traveled kilometre. At the end, the volunteer network „make a difference“ received EUR 10,000 for its projects.



Step #4: Through China with the ease of a plastic bearing

The tour country China challenged us with a first test of our patience: The approval from Peking arrived only a few hours before the start. The route went from Shanghai via Qingdao at the China Sea to Peking and back. Here again more than 5,000 km.



Start in the hyper-modern metropolis of Shanghai.



Major press conference for the tour kick-off in China.



Made it! The driving permit from Beijing arrived only hours before the tour start.



On the road in China. The daily trips frequently went deep into the night.



Many employees took advantage of the tour stop-overs at their company to find out about iglus® high-performance polymers.



In addition to the compact car, the Truck in-house trade fair - specifically designed for the tour - was an attraction.



Intermediate stop-over along the East China Sea in Qingdao.



A must for a tour of China: Stop-over along the Great Wall of China.

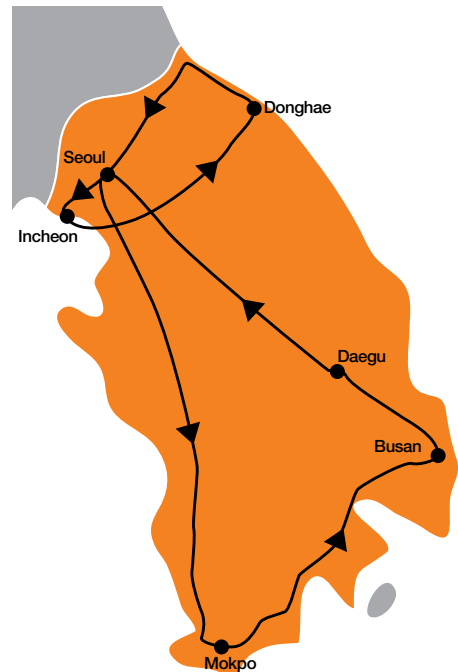


Our compact car in front of the Mao Mausoleum in China's capital, Beijing.



Step #5: Right across South Korea

South Korea was the first country that our car could enter with no complications and in record time. This left us enough time to head 3,300 km right across the country. From the border with North Korea to the metropolis of Seoul with more than a million inhabitants and on to the southern tip of the country by the East China Sea.



Arrival in Busan, Korea's second largest city.



In the middle of Seoul, the tour was presented to the Korean press and officially started.



The car was wished the best of luck in a colorful shamanic ceremony. We then headed straight off through Korea.



We crossed Korea from north to south. At the most northerly point, in the border region with North Korea, known as the 'Demarcation Line', we even had to pass military checkpoints.



The team was on the road for many hours every day so as to drive as far and visit as many customers as possible.



On the Seoraksan, one of Korea's highest mountains (over 1,700 m).



One of many customer visits: A solenoid valve manufacturer uses iglidur® bearings for automotive applications.



Permanent companions on all customer visits: dry-tech® box and catalog.

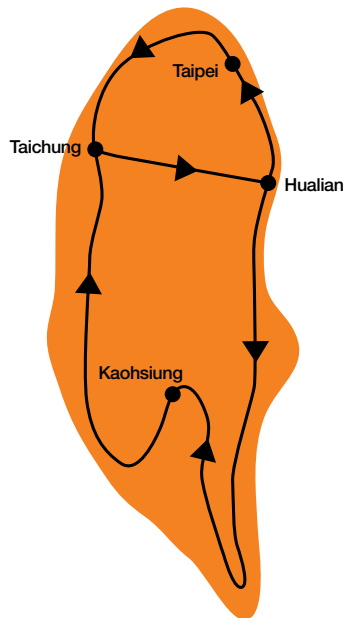


For every kilometer we drove, 1 kg rice was donated to soup kitchens for people in need. By the end of the journey, this equated to more than 3 tonnes of rice.



Step #6: Jungle and high mountains in Taiwan

Despite Taiwan being the smallest country on our round-the-world trip, our little car still traveled more than 2,700 km. On route to iglidur® customers, it drove through dense rainforests and green rice fields, across mountain passes at altitudes of over 3,000 m and through ultra-modern cities. The iglidur® bearings functioned without any problem in the tropical conditions with temperatures of over 30 degrees and extreme humidity.



A small car and skyscrapers. At a towering height of over 500 m, the Taipei 101 is one of the world's tallest buildings.



The 'sacred tree' in Taroko National Park is said to be more than 3,000 years old.



The press conference was attended by journalists and dignitaries from Taichung City.



As it was the rainy season in Taiwan, the car was sometimes even allowed to drive into the factory buildings.



On the south coast of Taiwan, where the weather was far better.



A huge mountain range runs through Taiwan. The mountain pass winds its way into the clouds at altitudes of over 3,000 m.



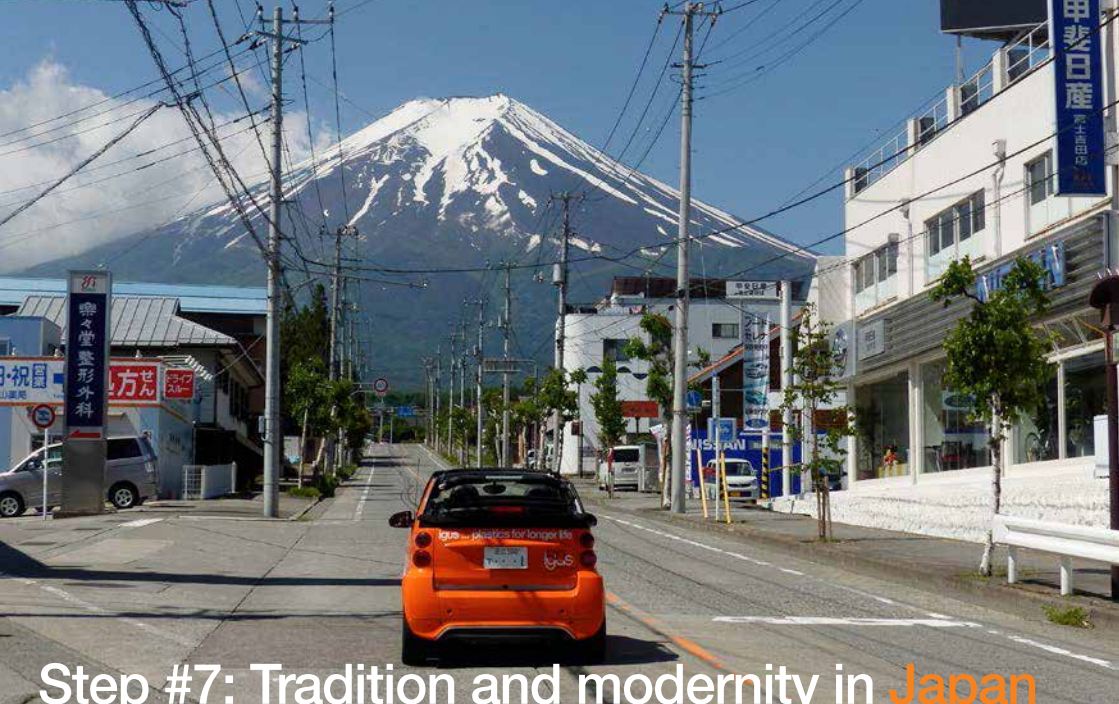
Two organizations that support disabled children are assisted by the donation of €1 for every kilometer driven.



The bike industry plays an important role in Taiwan and for iglidur® bearings. Many customers from this sector were visited on the tour.



Impressive temples regularly emerge from the jungle.



Step #7: Tradition and modernity in Japan

Japan was the last and most easterly stage of our world tour in Asia. Our compact car travelled more than 5,200 km throughout the island nation. The Japanese colleagues not only planned the tour itself down to the last detail, even customer visits were coordinated down to the minute. Following extensive red tape during the certification process, the tour went from the megacity Tokyo to the most southerly tip of Japan, travelling past Mount Fuji and back North to the City of Sendai, which was particularly hard hit by the 2011 tsunami. The collected donations were presented to an organisation that is helping the victims of the disaster.



Traditional buildings can also be seen everywhere in the high-tech country of Japan.



Successful press conference in Tokyo for the tour kick-off, including opening words from the German Embassy in Japan, which helped us manage the complicated certification process.



Left-hand traffic, traffic jungle, and Japanese traffic signs. At times, it was difficult to stay oriented while driving in Tokyo.



On our way to the South, we were able to get very close to an active volcano.



The rural settings of Japan with lush mountains and rice patties were in stark contrast to Tokyo.



Visit to Hiroshima. The building in the background was left standing as a memorial to the bomb attack.



Almost daily customer visits were also scheduled in Japan.



The money collected per driven kilometre was donated in Sendai to an organisation that helps children in the aftermath of the tsunami.



The entire Japanese staff sent the car off to Brazil with a traditional percussion performance.



Step #8: football fever and expansive beaches Brazil

Our car arrived in South America - more specifically Brazil - just in time for the Football World Cup. In addition to a wide range of emotional football experiences in Sao Paulo and Rio de Janeiro, the tour also continued to a host of customers. From the tropical North to the wintry, cold South on the border to Argentina. Our car tackled the enormous distances with partially extraordinarily poor road conditions with shining colours. In the end, we travelled more than 6,000 km, resulting in an outstanding donation of EUR 1 per driven kilometre to a children's hospital at the corporate headquarters of igus® Brazil in Jundai.



Football fever in Rio. Of course, we paid a visit to the famous Maracana stadium (top) and the fan festival at the Copacabana (below).



Six iglidur® bearings were installed in thousands of seats, allowing them to be folded smoothly.



Travelling through the road canyons of the megacity Sao Paulo. With a population of more than 20 million, it is the economic hub of Brazil and the largest city in South America.



The partially long cross-country trips into remote regions placed considerable demands on iglidur® bearings and the driver.



Our car is represented by our dry-tech® box anywhere it cannot reach. Here, at the famous Iguacu waterfalls on the border to Argentina.



Naturally also in focus in Brazil: customer visits, which are frequently also conducted outdoors in front of the company site because of the tropical climate.



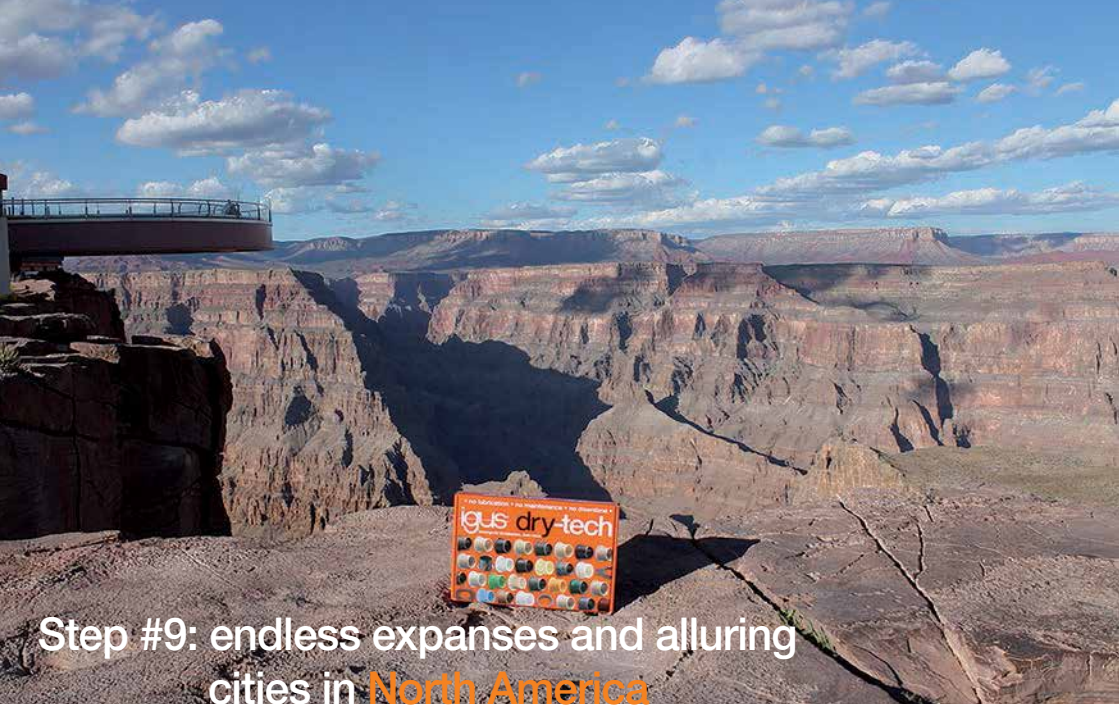
Blumenau is home to the world's third largest Oktoberfest. Last year's princesses stopped by for a photo opportunity with our car.



In Rio de Janeiro with the famous sugar cone mountain in the background.



Major interest in the compact car also by journalists at the concluding press conference in Sao Paulo.



Step #9: endless expanses and alluring cities in North America

Our ninth stage began in the USA's most northern state – the secluded region of Alaska. From Anchorage, we drove through the breathtaking Canadian countryside to the legendary cities on the west coast of the USA, through spectacular national parks and fertile landscapes in the mid west, past the southern states and to the famous east coast. In total, our car travelled over 23,000 kilometres.



Our iglidur® car in the midst of Chicago's urban canyons.



Dust and scree – our little iglidur® car mastered Alaska's roads with flying colours



In Yukon in the solitary north-west of Canada, we encountered more bears than people



A lovely view – on the steep roads of San Francisco with a view of the harbour and the prison island of Alcatraz



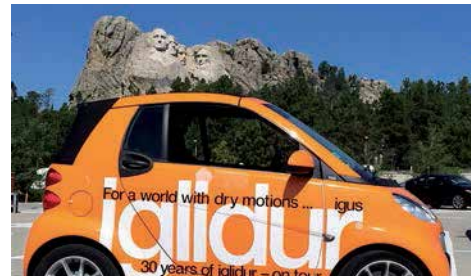
Our star among its peers: a visit to Beverly Hills



A pleasant stroll along the Las Vegas strip: innumerable casinos and colourful life



During our tour, we visited multiple customers as well as the iglus® trade fair at the IMTS Trade Show in Chicago, one of the biggest trade shows in the USA.



Driving past Mount Rushmore: not set in stone but still with a long service life – our iglidur® bearings lasted for the entire journey



Good vibes for iglidur: in Nashville, Tennessee, music was in the air



Endless expanses even in the mid west of the USA



The dry-tech® box represented the car at the Niagara Falls



Some customers inspected the little car very closely



A stop in the US capital with the Washington Monument in the background



The day stages involved hours of driving through the vast expanses of the plains, such as here in South Dakota



Our little car posing for a photo against the Chicago skyline



A brief visit to Fenway Park in Boston, the oldest stadium in the Major Baseball League



An Indian summer on the east coast of America



igidur® on tour in front of the Milwaukee Art Museum



We also visited major publishing houses, such as Penton Media in Cleveland



In the mad traffic of the 'Big Apple'



Last stop before returning to Europe: the little car on Times Square in New York City



The little iglus® in-house exhibition was always well-attended during meetings with customers



On the road in North Carolina, the heart of the US furniture industry – as you can clearly see!



Senator Jack Reed also visited the iglus® head office in celebration of the successful tour of North America.



A success: the US iglidur® on tour team at iglus® inc. in Providence, Rhode Island

iglidur® on tour – more than 30 countries in 14 months

ASIA

02/2014 – India
03/2014 – China
04/2014 – Korea
05/2014 – Taiwan
05-06/2014 – Japan

AMERICA

06-07/2014 – Brazil
08-10/2014 – USA,
Canada

EUROPE

25/10/2014 – return to
Cologne for the 50th
anniversary celebration
of iglus®



starting on 10/2014 - the great tour of Europe :

Germany ... Austria ... Italy ... Switzerland ... France ... UK ... Belgium ... Netherlands ... Norway ... Sweden ... Denmark ... Poland ... Czech Republic ... Slovak Republic ... Hungary ... Romania ... Bulgaria ... Turkey ... Serbia ... Croatia ... Slovenia ... Spain ... Portugal

Around the world with polymer plain bearings from igus®: iglidur® on tour ... more than 30 countries in 14 months



follow iglidur® on tour live ...



Picture of the day, detailed reports and videos at:
▶ blog.igus.eu/iglidurontour



Hot off the press by mail and picture stay up to date at:
▶ facebook.de/igusDE



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