KEMPER SYSTEM

THE DUCK

Liquid Waterpoofing and Roofing Systems UK Issue 1

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London, (UK)

Solvent-Free Liquid Waterproofing Solution KEMPEROL® Keeps Guildhall Fully Functioning

At London's Guildhall, refurbishment of the west wing roof required a specification that would take into account a number of factors. The area in question sits above function rooms and high ranking councillors' accommodation and this section of the building had to remain operational throughout the roofing project. The roof itself is complex with significant amounts of detailing and numerous service units, demanding a solution that could be fitted accurately to the exact contours of the structure without the risk of leaks. Finally, the specified system had to deliver best value, which meant using a waterproof membrane that could be laid quickly, with proven longevity and a reliable warranty. To address all of these requirements The Corporation of London specified solvent-free KEMPEROL® **2K-PUR, a cold applied liquid waterproofing membrane.**

Explains Michael Coleman from The Corporation of London: "Choosing a solvent free cold liquid applied system meant that we could continue on a business as usual footing without having to worry about fumes or the hazardous equipment used for hot-applied systems. What's more, thanks to the 20-year warranty and exceptional service life offered by the KEMPER SYSTEM waterproofing we can be confident that our investment in refurbishing the roof now will pay dividends for many years to come."

The 1,200m² section of roof was refurbished by specialist contractor, Concept Roofing & Cladding, in a 10 week programme beginning at the end of September.

The KEMPEROL® 2K-PUR membrane bonded directly on top of the existing Veral Aluminium (foil faced modified bitumen composite) which was cleaned and primed by Concept prior to the application of the membrane.

Explains Steve Web from Concept: "Being able to apply the new waterproofing membrane over the existing substrate saves time on site and means that very little if anything has to go to landfill. However, it's important that the existing substrate is as clean and even as possible to ensure a secure bond and good finish, so we carry out thorough preparation works first."

With the roof primed and ready, Concept systematically applied specific amounts of the liquid resin to the substrate, spreading it out evenly before immediately laying a durable, flexible non-woven fleece reinforcement directly onto the wet resin. More resin is then poured and rollered out on top of the fleece, whilst pressing it down to ensure complete saturation of the fleece with the resin in a single process, removing any folds, creases or bubbles. Once fully cured, the fleece reinforced liquid membrane becomes a single, seamless waterproof surface which forms a strong, but flexible bond with the roof that will not delaminate.

KEMPEROL® 2K-PUR has an 80% resin content derived from the seeds of the tropical Castor plant (Ricinus communis) a renewable resource. The fleece is made from 25% recycled plastic bottles and can be cut to size and shape quickly and easily on site. This enabled Concept to cut it to fit the many complex shapes and angles in the roof.

The successful roofing project formed part of a wider upgrade to Guildhall's west wing, which also included cleaning of the external stonework.

Work data:

Project: West Wing, Guildhall 1,200m²
Client: The City of London
Materials: KEMPEROL® 2K-PUR
KEMPEROL® 200gsm Reinforcement Fleece
KEMPERTEC® D-Primer
KEMPER SYSTEM Contractor: Concept Roofing & Cladding Limited

Washington (USA)

US Capitol Building Waterproofing of 33 Antefixes

An American Icon

Located atop Capitol Hill, the United States Capitol in Washington, D.C., is not only one of the most architecturally impressive buildings in the world but also one of the symbolically important ones.

For almost 200 years, it has housed the meeting chambers of the Senate and the House of Representatives. The construction of the Capitol started in 1793, and since then it has been built, burnt, rebuilt, extended, and restored to become a highly valued monument to the American people and their government.

When the U. S. Capitol was expanded in the 1850s, the original wood-frame dome was replaced by a cast-iron dome. The dome structure, which weighs about 4,450 tons, expand and contract slightly, depending on the weather. When several leaks were found and the water started penetrating into the Rotunda, an extensive restoration program was started in the late 1990s. After examining the detail area adjacent to the 33 antefixes, (ornamental elements derived from the ancient Greek and Rome design), it was determined that water had started leaking into the structure behind the architectural elements.

To prevent further deterioration waterproofing and protect the Nation's

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Selfridges Department Store, London (UK)

Optimum Protection for Iconic Building

Harry Gordon Selfridge opened his world famous department store in London's Oxford Street in 1909 (© Latitudestock, Getty Images).

Selfridges in Oxford Street, the UK's 2nd largest department store, was built in 1908 to a neoclassical design from the desk of American architect Daniel Burnham. Constructed in several phases, the original roofs have since become increasingly complex over the years with the addition of various plant and equipment associated with ancillary building services.

The existing asphalt roof had deteriorated into a poor state of repair, with numerous leaks affecting the fabric and structure of the building. The practice of patch repairs had not proved cost-effective or reliable, and a more permanent solution was sought that would accommodate the numerous upstands and penetrations associated with the mechanical plant, while allowing access for maintenance teams without costly reinforcement. At the same time, it was of course essential that the refurbishment could be undertaken with minimum disruption to customers and staff.

No logistical nightmares

The need to complete the repair without impacting on the retail operation, particularly with regard to the HVAC and air handling throughout the building, excluded the use of solvent-based materials. KEMPEROL® 2K-PUR was specified – the solvent-free wet-on-wet cold liquid applied waterproofing – which being solvent free makes it highly suited to applications such as this where even temporary closure due to solvent fumes given off by other systems is not an option. Because it would bond to the existing asphalt the need to remove and dispose of large volumes of waste material was also avoided, which in one of London's busiest streets would have proved a logistical nightmare!

Quickly and easily

Following preparation of the existing asphalt, the roof was primed using KEMPERTEC® D-Primer and then waterproofed with KEMPEROL® 2K-PUR. This 2-component, polyurethane-based system incorporates a reinforced polyester fleece which can be cut and formed on site, meaning that the numerous details, upstands and penetrations (typically the most vulnerable part of any roof waterproofing system) were handled quickly and easily. This not only saved on both installation time and costs, but because the terminations are fully bonded without the need for mechanical fixings, the roof waterproofing system is entirely seamless. This is indeed one of the reasons for KEMPEROL®'s exceptional durability, with some of the earliest installations now approaching 40 years without failure. KEMPEROL® 2K-PUR is a high-performance waterproofing system that will bond to almost all substrates and is permanently elastic, so bridges cracks and seams and will withstand thermal and mechanical movement without the risk of tearing.

The roof repair at Selfridges was completed with no disruption to operations and was considered so successful that a second phase (800 m²) has since been commissioned.

Work data:

Project:	3,000 m² Selfridges Department Store Complex Roof, Oxford Street, London
Contractor:	Capital Roofing
Specifier:	Selfridges
Materials:	KEMPERTEC® D-Primer; KEMPEROL® 2K-PUR Waterproofing System

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Detail waterproofing on the cast-iron dome (© Rob Hill, fotolia.com).

Capital, installing a proven and reliable waterproofing solution behind these cast iron ornaments was critical. However, this turned out to present a challenge to the architect as the area is difficult to access and extremely tight to work at. A liquid-applied system that fully adheres to the substrate, following any shape and contour of the surface was the preferred solution. In 2010, the surfaces behind the Antefixes were waterproofed with KEMPER SYSTEM's odor free waterproofing system KEMPEROL® 2K-PUR.

Liquid-applied in tight spaces.

Standard Restoration & Waterproofing Co., Inc., MD, an approved KEMPER SYSTEM contractor, was awarded the job and installed the system. Prior to applying the new waterproofing, several layers of lead based paint had to be completely stripped away. Then the surfaces were fully cleaned and primed.

The benefits of liquid-applied waterproofing systems greatly depend on the fleece reinforcement. It gives the system the ability to withstand structural movements between elements of different materials and compensates for the impact of frost-thaw cycles. KEMPER SYSTEM waterproofing membranes incorporate a high tensile strength, polyester fleece reinforcement which can be tailored to the area that is to be waterproofed. In combination with the cold-liquid applied resin it forms a durable membrane.

The comprehensive restoration program addressed maintenance, repair, modification and restoration for all systems, spaces and finishes from the floor of the Capitol Rotunda to the Statue of Freedom to preserve the architectural monument and symbol of the United States.

Work data:

Project:	33 Antefixes, US Capitol Dome, Washington DC
Materials:	KEMPERTEC® Primer; KEMPEROL® 2K-PUR Waterproofing system
Architect:	Hoffman Architects, Washington DC
Contractor:	Standard Restoration & Waterproofing Co., Inc., MD

Waterproofing tram cars on the Isle of Man (UK)

Historic Roofs Waterproofed

The Isle of Man is home to the oldest vintage narrow-gauge railway in the British Isles and has the oldest rolling stock still in use worldwide. Founded in 1893, this electric railway still operates today, mainly as a tourist attraction. The picturesque line runs 27 km down the east coast of the island from Douglas, the capital, to Ramsey.

All the tram cars were built between 1893 and 1899. Their roofs are made from separate wooden parts that move somewhat when they are underway. These roofs were originally covered with sailcloth impregnated with a lead-based coating. Later, glass fibre-reinforced roofs were tried out. However, these proved to be too rigid and developed cracks.

Tim Devlin, a local KEMPEROL® contractor, suggested using KEMPEROL® and so far three of the historical tram cars have been successfully waterproofed with the permanently elastic resin. First of all, he removed the original covering and primed all the timber with KEMPERTEC® D-Primer. The next step was to apply KEMPEROL® 1K-PUR – used directly out of the container – to the wooden roof. Success has proved him right. There are nearly 30 more tram cars waiting to be waterproofed as and when their regular inspections are due.

Materials:
KEMPERTEC® D-Primer
KEMPEROL® 1K-PUR
Waterproofing System

Just waterproofed – the roof to this historic tram car was treated with KEMPEROL®.

Some 10,000 m² of flat roof surfaces were rewaterproofed with KEMPEROL® liquid waterproofing before installing a photovoltaic system with an output of 406 kWp.

The Archdiocese of Bamberg relies on solar energy (Germany)

KEMPEROL® Secures Investment

The solar boom continues unabated in Germany; shimmering blue panels are appearing on more and more roofs. But to make sure that building owners can enjoy their free solar energy without any worries, not only the calculations for the photovoltaic system needs to add up.

The location is crucial to calculating the profits, but other factors are also very important. A solar energy system on the roof is reckoned to have a minimum lifetime of 20 years. And on flat roofs in particular, it should be ensured that the waterproofing will do its job properly over that period. Damage to the roof covering can curtail profits substantially. Dismantling all or part of a PV system in order to repair a leaking roof is a costly business expense.

The building complex, on which the photovoltaic system was installed, houses offices, storage units and a joinery workshop.

The Property Department of the Archdiocese of Bamberg was aware of this problem and arranged for 10,000 m² of flat roof on the Laubanger Industrial Estate to be rewaterproofed with KEMPEROL® waterproofing by BBS+Dach GmbH before installing the EUR 1.3 million photovoltaic system with an output of 406 kWp.

Easy access and an unrestricted layout for the modules are the great advantages of a photovoltaic system on a flat roof. But the problem with retrofitted systems is always the penetration of the roof covering. The client in Bamberg therefore opted for a system that does not penetrate the roof. The elements are connected together and weighted down with stone blocks at central points. The self-weight of the system is therefore high enough to guarantee the stability of the system – wind uplift is not a problem. In addition, the rear of each PV module was closed off with sheet metal in order to decrease the surface area affected by strong winds. The PV modules were installed parallel with each section of finished roof and distributed uniformly over the crests of the trapezoidal profile steel sheeting.

"Our client regards the photovoltaic system as a long-term investment." explains BBS Managing Director Dieter Hahn, "And therefore providing reliable waterproofing over the entire area is crucial to preventing any potential damage to the roof." Partial refurbishment of the building complex, which was mainly built in 1984 and houses offices, stores and a joinery workshop, had been scheduled anyway. But all the other roof surfaces unaffected by the refurbishment were also waterproofed anew without having to remove the existing finishes.

Positive experience with KEMPEROL®

About 25% of the old flexible bitumen sheeting – mainly laid on trapezoidal profile steel sheeting with mineral-fibre thermal insulation, but in some places on concrete slabs plus thermal insulation - was no longer watertight. The waterproofing had sagged over the course of time, leaving some roof outlets at high points and ponding in other low lying areas. Over the years the flexible bitumen sheeting had become brittle and was breaking away around the seams and joints. The thermal insulation was renewed in those areas with moisture damage.

The roofing team applies the KEMPEROL® waterproofing membrane

The brief called for a waterproofing system…

- with proven permanent resistance to UV radiation in order to prevent embrittlement; KEMPEROL® remains permanently elastic and flexible over a temperature range from –30 to +90°C and does not contain any plasticisers.
- with a full bond to the substrate so there is no risk of moisture seeping underneath; KEMPEROL® is laid as a liquid and therefore adapts to every surface as though tailor-made for it, and it bonds to the substrate over its full area as it cures.
- KEMPEROL® V210 is light grey, the light colour aids very high reflection of the sunlight.

"As the Archdiocese had a very positive view of KEMPEROL® thanks to its experience with other buildings, it was decided to use this liquid waterproofing once again," reports BBS senior manager Erich Eichelsdörfer. The work was carried out in two phases: 4,000m² in the summer of 2010, 6,000m² in the summer of 2011.

Work data:

Project:	10,000m² of flat roof and approx. 1,000 m of junctions on one building complex
Client:	Archdiocese of Bamberg
Materials:	KEMPERTEC® BSF-R
Primer;	KEMPEROL® V 210 Waterproofing System; K Architectural signature of Jean-Pierre Lott (France)TP Talcum
KEMPER SYSTEM contractor:	BBS+Dach GmbH, Bamberg

Mann Island, Liverpool (UK)

KEMPEROL® Keeps It Cosy At Mann Island

Residents at Liverpool's iconic Mann Island waterfront development will be home and dry thanks to a cold-applied waterproofing membrane from KEMPER SYSTEM.

Billed as Liverpool's most exclusive address, the scheme, designed by architects Broadway Malyan, comprises 376 one, two and three-bedroom apartments located between the historic 'Three Graces' and the famous Albert Dock. The contemporary, angular design includes stepped terracing with the flat roof of each apartment forming the exterior garden terrace of the apartment above. As a result, effective waterproofing was essential and KEMPER SYSTEM's KEMPEROL® V210 cold-applied liquid waterproofing system was selected for the job.

Mark Bruchez, technical director from KEMPER SYSTEM, said "The original specification for the flat roofs/terraces called for a hot applied waterproofing system but use of a hot system while working at height posed unnecessary health & safety risks. Cold-applied KEMPEROL® V210 is a 3-component, polyester-based system that forms a permanently elastic, seamless membrane that is also highly permeable, durable and tear-resistant. The system has been applied to 600m² of roofs/terraces to provide a long-lasting seal below the hard and soft landscaping."

Tetra Pak factory, Maval (India)

12,000m² for Tetra Pak

When you hear the word Tetra Pak, you immediately think of drinks cartons. Tetra Pak is a very well-known brand-name. However, it is at the same time the name of a company that today operates in more than 150 countries. In 2009 the approx. 21,700 employees generated a turnover of EUR 8.955 billion.

A total of 12 000 m² of roof surfaces have been waterproofed with KEMPEROL® for Tetra Pak in India.

It was towards the end of the 1990s that Tetra Pak opened a plant in Maval near Pune. And KEMPER SYSTEM India has been working with the plant continually since 2001. Initially, the work involved only smaller indoor surfaces (floor coatings), but our subsidiary was subsequently appointed to waterproof a total of 10,000m² of roof surface with KEMPEROL®. A further 2,000 m² of roof surface was treated with KEMPER SYSTEM products in 2010/2011.

Work data:

Project:	10 000 m² of flat roof, 3 000 m² of floor coating
Client:	Tetra Pak
Materials:	KEMPERTEC® EP-Primer; KEMPEROL® V 210 Waterproofing System
KEMPER SYSTEM contractor:	Kalinga Coatings, Pune

Photo © Helmut-Kaltenleitner/Pixelio.de

Have you ever asked yourself why KEMPER SYSTEM has a duck for its company logo?

Well, nature is our role model here. And a duck, with its watertight plumage, is an ideal example of perfect waterproofing.

The internal courtyard roofed over in glass between the classical facades.

Waterproofing to steel-and-glass roof, Budapest (Hungary)

Delicate Artistry

Enterol on the road to success. The Hungarian KEMPEROL® partner has already won two prizes in the liquid waterproofing category of the "Roof of the Year" competition sponsored by EMSZ, the Hungarian Roof Contractors Association.

In 2008 the association chose the waterproofing to Hotel Gellért, protected by a conservation order, as the winner of the award, and in 2009 it was the turn of "The Whale", a spectacular curving conference room with zinc external cladding on a glass roof. In addition, in 2010 Gábor Baltási, György Gutai and Balázs Tóth, the owners of the company, received a "Certificate of Appreciation" in recognition of their waterproofing to a special glass roof.

A group of buildings in the classical style in the centre of Budapest is currently being converted into a stylish luxury hotel. The individual parts of the complex surround a spacious internal courtyard that is roofed over with a riveted steel-and-glass construction. The delicate roof rises up in the centre and is connected directly to the facades on all four sides. Certain glass elements are designed as separate rooflights and can be opened to ventilate the interior.

The entire steel structure was given a coat of KEMPEROL® as a preventive treatment in order to ensure that moisture could not find its way into the building via joints or rivets.

Accurate work: you can only see the waterproofing when you look really closely.

The waterproofing cannot be seen from the inside, the artistic work of the Enterol contractor can only be seen from above. The contractor has traced the lines of the structure exactly. You can only see the waterproofing when you know it's there. The result impressed the jury of the Hungarian Roof Contractors Association to such an extent that they decided to award a special certificate.

The riveted steel structure was waterproofed with KEMPEROL®.

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Flat roof waterproofing at Philip Morris PMP, Onnens (Switzerland)

60,000m² Waterproofed with Kemperol V210

A total of 60 000 m² of flat roofs were waterproofed with KEMPEROL® V 210 at the Philip Morris plant.

The waterproofing to any industrial roof must satisfy the very highest demands. Although the cost of erecting the building is optimised, a dependable roof is absolutely essential if expensive production plant or stored goods are to be reliably protected against moisture. If it is felt that the protective function is no longer guaranteed, e.g. in the event of treacherous weather conditions, the potential damage could run into millions.

The hail resistance of the old roof was questioned...

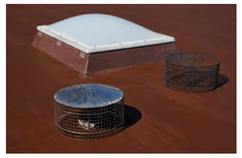
Production, order-picking and dispatch operations for Philip Morris products for the European market take place at the company's Onnens plant in Switzerland. During a routine inspection of the roof waterproofing, the hail resistance of the existing waterproofing was questioned. The insurers demanded that the roofs – a total of 60 000 m² – be refurbished without undue delay in order to comply with the insurance policy. Fritz E. Lanker, a building physics consultant appointed by Philip Morris to supervise the project, examined KEMPEROL® liquid waterproofing and sheeting solutions and had test surfaces prepared. In the end, the KEMPEROL® solution was selected because the material satisfied several requirements in a better way and primarily because the additional weight on the roof was only 3.5 kg/m².

1. Removing the old roof finishes was out of the question technically and because the warehouses could in no way be left unprotected. The refurbishment work had to be carried out on top of the existing Hypalon® sheeting. It turned out that the bond between different sheetings tested and the old substrate was inadequate. KEMPEROL®, on the other hand, adhered to the existing Hypalon® sheeting over its full area without any signs of becoming detached.
2. For structural reasons, the permissible extra load on the roof surfaces was limited to 7 kg/m². A decision in favour of new sheeting would have used this allowance to the full. But the KEMPEROL® solution only amounted to 3.5 kg/m², i.e. just half of the allowable extra load. So there is still 50% in reserve even after refurbishment.
3. Another advantage is that KEMPEROL® is applied in liquid form and therefore surfaces and junctions can be quickly waterproofed with just one material; no need for additional fittings, fixings etc.
4. Samples taken from the outdoor test surfaces after a longer period of exposure to the weather were tested for hail resistance in an independent laboratory, EMPA in Zurich, and the liquid waterproofing achieved excellent results.

Competence and quality

B & L Bautechnik AG from Biel, a busy KEMPER SYSTEM partner in Switzerland since the mid-1990s, carried out this major project in three stages. A team of at least six B & L staff was always on site."We bring together competence and quality," says André Bregnard, company founder and chair of the administrative board for the B & L group of companies. "We are known in this region for our competent advice and troubleshooting skills. When the going gets tough, many clients look to us." As in this case. B & L will continue to monitor the refurbished roofs of the Philip Morris PMP plant in Onnens in the future. A long-term maintenance contract has been concluded.

The KEMPERATOR enables large areas to be waterproofed quickly and easily.



All details such as rooflights, roof outlets, junctions, joints and penetrations are incorporated seamlessly into the waterproofing on the surface.

Fast application by machine

Liquid waterproofing has an unjustified reputation for being expensive because of the price of the materials. However, when working out the total cost, labour, materials and other factors (e.g. disposal) all must be included in the calculations. The "KEMPERATOR" application machine speeded up the work considerably on the 60,000m² of flat roofs in Onnens, which were interrupted only by rooflights and outlets. Furthermore, the product chosen, KEMPEROL® V 210 M, eased the work. In contrast to the classic multi-part KEMPEROL® V 210, the two-part, pre-accelerated variant is optimised for applying with the KEMPERATOR machine. The time-saving is reflected in the pricing, and results in better competitiveness.

Safety requirements

There are small aerodromes not far from the warehouses and so the risk that pilots could mistake such a large roof area for a runway had to be ruled out right from the start. The air safety aspect was therefore the reason why the client decided to order KEMPEROL® in a custom reddish brown colour.

Work data:

Project: 60,000 m² of flat roof surfaces on 3 production/ warehouse buildings, Onnens
Client: Philip Morris Products SA, Neuchâtel
Site management: Fritz E. Lanker Consulting, Biel
Materials: KEMPERTEC® BSF-R Primer; KEMPEROL® V 210 Waterproofing System
KEMPER SYSTEM contractor: B & L Bautechnik AG, Biel

Stratex Warm Roof System (UK)

Warm Coverage

The Travelodge Lancaster Central Hotel is located in the city center.

Located within the Lancaster City Centre Conservation Area at the junction of Spring Garden Street and King Street this 6 storey, 115 bedroom, £5 million hotel, was designed to meet specific acoustic and privacy requirements relating to its location.

Ground and first floor incorporate retail accommodation and the 4 storey hotel above is faced in natural smooth sandstone which respects the prominent and sensitive location.

KEMPER SYSTEM were specified to provide a full Stratex warm roof build up. Stratex is an integrated warm roof that offers exceptional performance and is supplied as a complete system.

The Travelodge in Lancaster incorporated the use of KEMPERTEC® D Primer, a KEMPERSHIELD Type 1 Vapour Barrier, foil faced KEMPERTHERM T (tapered) insulation boards, and was seamlessly water-proofed and protected using KEMPEROL® V210 with a 200 gauge fleece. All the components of the Stratex roof system are certified by the BBA.

As well as its exceptional performance and durability, one of the additional benefits of Stratex over other cold liquid or torch-applied warm roof systems is its superior speed of installation. These time savings are made at each stage (preparation, insulation and water-proofing) giving an overall reduction that can bring forward project completion times by several days on even modest-sized projects.

Work data:

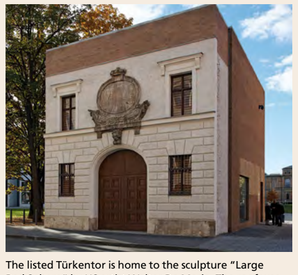
Project: 1 716 m² roof area, Travelodge, Lancaster
Specifier: AEW Architects & Designers Ltd, Manchester
Materials: KEMPERTEC® D-Primer; KEMPEROL V 210 Waterproofing System
KEMPER SYSTEM contractor: Topek Ltd., Belshill, Scotland

The drain outlet is fully incorporated into the seamless, cold applied, liquid waterproofing membrane.

Türkentor, Munich (Germany)

The City's Smallest Museum

It is not unusual for special works of art to be displayed according to the principle of 'one room – one work'. However, the sculpture "Large Red Sphere" by US artist Walter De Maria has been installed at a unique site: the Türkentor, a listed fragment of the old Türkenkaserne (Turks' Barracks) in the middle of Munich, situated close to the Pinakothek der Moderne. The Pinakothek der Moderne Foundation contributed 780,000 euros towards implementing the ideas of the Berlin-based architects Sauerbruch Hutton. Through close cooperation between the artist and the architects the historic building was renovated and remodelled so that the sculpture and architecture relate to one another; turning the Türkentor into Munich's smallest museum. The Türkentor was opened to the public as a place of aesthetic experience in October 2010. The non-visible roof was waterproofed by the German company Karl Gabler Bedachungen (owner: Helmut Hofrichter) using KEMPEROL®.



The listed Türkentor is home to the sculpture "Large Red Sphere" by US artist Walter De Maria. The roof was waterproofed using KEMPEROL®.

Architectural signature of Jean-Pierre Lott (France)

White-Dome Sculptures

The new building for the Chamber of Handicrafts Loire-Atlantique.

KEMPER SYSTEM had the opportunity to take part in several building sites with the famous French architect Jean-Pierre Lott. Indeed, each time a white-dome erects in one of his constructions, which is a sort of an architectural signature, he uses the liquid-applied waterproofing system KEMPEROL® V210 and the finish coating KEMPERDUR® AC-Finish Color.

Its easiness to treat volumes, its capacity to be applied on any substrate and its wide colour palette are all the assets which appeals to him.

It's natural that a partnership was born. KEMPER SYSTEM France's contribution has recently been recognised in the publication of a bilingual book. It recounts the most beautiful buildings realized by Jean-Pierre Lott. We invite you to discover this architecture for yourself

Norbert Laurent: Jean-Pierre Lott, architecte (edition pc). This book presents a selection of the most representative buildings designed during the last decade.

A few projects with Jean-Pierre Lott:

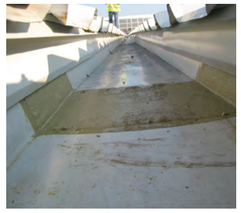
- The CNED's school for trainees in long-distance teaching methods.
- The Hugo Pratt inter-municipal multimedia library, Cournon d'Auvergne.
- The polytechnic institute in Argenteuil.
- The new junior secondary school of Gaillac.

Kragujevac (Serbia)

Safe Joints

At the end of 2008, Fiat signed a joint venture contract and took over 67% of the Zastava factory in Kragujevac. The factory of this Serbian automobile manufacturer, which is well known in eastern Europe, is situated roughly 140 km southeast of Belgrade.

Sheet metal is an inexpensive roof covering and is popular for industrial buildings, primarily for lightweight designs without large load-carrying reserves. Such roofs are lightweight, quickly erected and require only a simple supporting structure. In practice, it is essentially the physical properties of metals that lead to sealing problems. Metals expand considerably as the temperature rises and exhibit extreme contraction when temperatures fall. This always leads to problems where



The dynamic expansion joints, in every 18 m, were waterproofed with KEMPEROL® 2K-PUR.

materials with varying coefficients of thermal expansion are connected, which is often the case at details and junctions.

Dependability down to the smallest detail

The 120,000 sqm roof of the manufacturing hall was constructed with trapezoidal sheet metal. The joints between these sheets which occur at intervals of 6 m were a problem zone. As a part of extensive modernisation measures, the Slovenian KEMPEROL® Partner Ambient based in Litija waterproofed the joints as well as gutters and junctions – a total of 16,000m – with the odourless KEMPEROL® 2K-PUR.

Every 18m the contractor installed a dynamic expansion joint. The permanently resilient material adapts to every substrate relief and is capable of seamlessly waterproofing even complex junctions.

A special feature of this project was the surface of the trapezoidal sheet metal. It was treated with a PVDF-coating (PVDF: polyvinyl fluoride) which - similar to a Teflon surface - has anti-adhesive properties. In order to achieve an adhesive bond between the waterproofing applied in liquid form and the substrate, the PVDF coating was mechanically abraded and the surface was cleaned with KEMPERTEC® MEK.

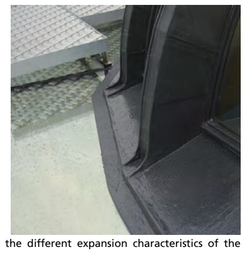
Having fully prepared the surface ready for the waterproofing membrane, the roofers subsequently applied KEMPEROL® 2K-PUR to the flat roof.

The Zastava factory in Kragujevac.

Ambient executed the waterproofing work in two phases in 2010 and 2011. Shortly after completion of the work, the client awarded another contract for the waterproofing of 1,000m of gutters.

Work data:

Project	Waterproofing of 16 km of gutters and junctions
Client:	Trimo Inženiring Serbija d.d.
Material:	KEMPEROL® 2K-PUR Waterproofing System
Contractor:	Ambient Litija d.o.o., Slovenia



A thick polyester fleece was used to absorb the different expansion characteristics of the various materials.

Sealing a metal skin in Budapest (Hungary)

Saving the whale

In 1992, an international banking and insurance group asked Prof. Erick van Egeraat to add an extension to a historic building in the centre of Budapest. The four-storey neo-renaissance building from 1882 was carefully restored and imaginatively extended by adding modern architectural elements. The resulting complex is a distinctive and striking synthesis of a clear, modern structure with intuitively organic shapes, a style that von Egeraat himself describes as "Modern Baroque". The architect is a leading member of the Dutch avant-garde and in 1983 was one of the founding members of the architecture practice mecanoo. In the mid-90s, he opened his own office, EEA, Erick van Egeraat associated architects, in Rotterdam and Budapest.

Modern baroque

His organic ideas are epitomised by the conference room, which is located on the glass roof. This room is a curved structure covered with an outer skin made of zinc. It has the appearance of a swimming whale, an association which is manifested in its nickname, "The Whale". Emerging high above the courtyard, it bursts through the smooth expanse of the transparent roof. Although the Whale cannot be seen completely from any position in the restored original building, its presence is tangible everywhere.

2009/2010 – 15 years after the completion of the Whale, water damage on the interior meant that the entire zinc skin had to be waterproofed with Kemperol. This permanently elastic liquid waterproofing system:

- retains the distinctive appearance of the organically shaped structure without altering the look and feel of the metal,
- forms a safe and highly functional bond with the glass elements,
- is highly durable and is capable of withstanding material expansion.

The substrate

To ensure that the waterproofing seal is durable and lastingly resistant, it is essential that the substrate is properly treated and primed. In this project, the presence of different substrates called for special preparation and priming. The building envelope is made of metal. These surfaces needed to be degreased, roughened and rust removed in places. Then a layer of solvent-free KEMPEROL® 2K-PUR waterproofing was applied direct without a primer. This odourless liquid polymer based on polyurethane resin is applied as a liquid, coating the existing surface geometry seamlessly. Once dry, the system forms a durable bond with the zinc substrate. All seams, penetrations and gaps are seamlessly integrated in the elastic membrane.

One of the specific challenges of this project was the areas where the glass and the zinc sheets were joined. The zinc sheets joined an acrylic/glass roof. In the summer months in particular, zinc and glass have different expansion characteristics. To ensure that the joint was durable, the coating had to be sufficiently elastic to absorb these varying degrees of expansion. All traces of grease and other substances that could compromise the integrity of the joints were removed; the acrylic glass was sanded down and a KEMPERTEC® Primer was applied before the liquid polymer and polyester fleece were applied.

Liquid polymer coatings are always applied with a layer of polyester fleece. According to the regulations for "Roofs with Waterproofing Seals", the polyester fleece has to be at least 110 g/m² thick. In this specific project, the contractor used a fleece that was165 g/m² thick to achieve a final thickness of > 2 mm and to ensure that the waterproofing could absorb the varying degrees of expansion. The polyester fleece in the liquid polymer performs the following functions:

Ensures a specific thickness
Enhances tear-resistance
Covers up small cracks
Limits expansion

Roof of the year

According to product specifications, during application the ambient temperature must be at least + 5° C. It is recommended that the building is enclosed in spring and autumn to ensure that work can continue even in bad weather conditions.

In 2009, The Whale won the "Roof of the Year" award presented by the Hungarian roofers' association EMSZ in the category liquid waterproofing. This is Kemperol's second award. In 2008, the association awarded the "Roof of the Year" prize to Hotel Gellerts, a listed building.

Work data:

Project:	The Whale, Budapest, 450 m² building skin made of zinc
Owner:	ING Real Estate International, The Hague and Nationale Nederlanden Real Estate Hungary Ltd., Budapest
Architect:	Prof. Erick van Egeraat
Material:	KEMPERTEC® EP-Primer, KEMPEROL® 2K-PUR Waterproofing
KEMPER SYSTEM contractor:	Enterol-B KFT, Telki

The metal structure is joined to a glass roof

Apartments of the Royal Shrewsbury Hospital, Shrewsbury (UK)

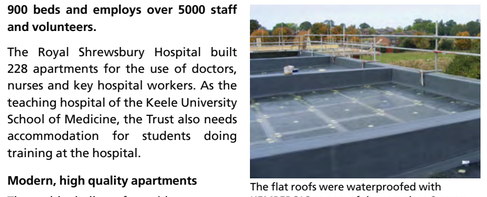
Stratex Warm Roof System for Hospital

The Shrewsbury and Telford Hospital NHS Trust is the largest provider of healthcare and hospital services in the region around Shrewsbury in Shropshire. Half a million people live in its catchment area. The trust operates several large hospitals with more than 900 beds and employs over 5000 staff and volunteers.

The Royal Shrewsbury Hospital built 228 apartments for the use of doctors, nurses and key hospital workers. As the teaching hospital of the Keele University School of Medicine, the Trust also needs accommodation for students doing training at the hospital.

Modern, high quality apartments

The old halls of residence were demolished to make way for modern, family-friendly flats and houses. comprising four-bed apartments, flats and houses. During the first construction phase, 20 balconies (each eight square metres in size) and 1,400 m² of flat roof area on four buildings were waterproofed with anthracite-coloured KEMPEROL®. The liquid waterproofing system was applied to the roofs as part of the complete Stratex Warm Roof System.



The flat roofs were waterproofed with KEMPEROL® as part of the complete Stratex Warm Roof System

Customized work: all drains, pipes and upstands were seamlessly incorporated in the waterproofing membrane.

The balconies were waterproofed with KEMPEROL® and finished with KEMPERDUR® TC and KEMPERDUR® Coloured Quartz.

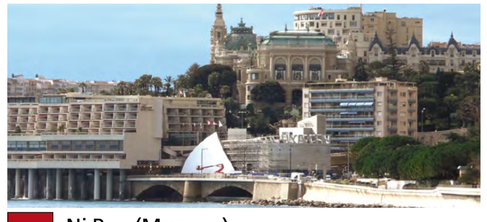
The new residential buildings were built for hospital staff and students.

Balconies Waterproofed with Kemperol

The balconies were waterproofed with KEMPEROL® and coated with KEMPERDUR® TC and KEMPERDUR® Coloured Quartz. This protects the waterproofing membrane and also provides a decorative and exceptionally hard-wearing wearing course.

Work data:

Project:	20 balconies and 1,400 m² flat roofs
Owner:	The Shrewsbury and Telford Hospital NHS Trust
Material:	KEMPERTEC® Primer, KEMPEROL® Waterproofing, KEMPERDUR® TC with KEMPERDUR® Coloured Quartz
General contractor:	Bullock Construction, Stoke-on-Trent office
KEMPER SYSTEM contractor:	Dave Rhodes Roofing Stoke-on-Trent



Ni Box (Monaco)

Architectural Amusement

The Ni Box is hip. This world of adventure is Monaco's newest and latest amusement and leisure centre, and it is part of a wider concept which aims to present fun activities for a range of different target audiences: a roof-top ice rink with a view across the water, "jorkyball" in brightly coloured halls, new video games with simulators, a discotheque overlooking the sea. The white building, which is located on the seafront, features modern architecture – fair-face concrete, sculptural concrete, giant porthole windows, rounded walls - creating a complex that is stark yet stunning.

As an architectural eye-catcher, the building has a curved wall on the sea-facing side. This wall acts as a screen and noise barrier, and in this maritime setting is reminiscent of a giant sail billowing in the wind.

The 500 m² concrete element was completely waterproofed with KEMPEROL® V210 and was painted brilliant white to emphasize the flowing lines of the building. The coating used was KEMPERDUR® AC and a white finish.

KEMPEROL® Goes East, China

KEMPER SYSTEM is active in China through its subsidiary and cooperates with Sowa Engineering Building Materials Science & Technology, a company specialised in floor coatings and waterproofing. In China, KEMPEROL® and KEMPERDUR® products are used on projects with a whole range of different specifications.

Industrial floor surfacing

In the city of Suzhou in Jiangsu province in the east of the country, Sowa personnel laid 3000 m² of KEMPERDUR® FC Floor Coating in the Chan Guchuan Spicery Factory. This is a polyurethane-based, self-levelling, two-part, solvent-free surfacing ideal for industrial floors. It is a system solution that is used on many projects in order to protect floor surfaces subjected to high mechanical loads.

The Japanese owners of the spices production plant were looking for a product that could withstand contact with hot water at temperatures of up to 95°C. The material is available in any RAL colour and so design requirements are quickly and easily met. Some of the floor areas in the Spicery Factory were

laid in a green colour.

Roof waterproofing

Changli Refining & Chemical Industrie Ltd. Co. is located in Yueyang, a city in Hunan province in southern China. Last year the company had a liquid waterproofing system laid on the roof to a control room at its oil refining plant: Sichuan Building Material Co. upgraded a total area of 2000 m² with KEMPEROL® V 210.

Waterproofing to wind power turbines

Renewable energy is a big topic in China, too. Wind power, alongside solar energy, is one of the most important renewable resources. However, wind power turbines have weak points that must be given long-lasting protection. In the city of Jiuquan in Gansu province in north-west China, Gansu Construction Group Co. waterproofed the tower/base junctions of diverse wind power turbines with KEMPEROL® V210 – a total area of approx. 1,500 m². Extreme weather conditions can lead to cracking and spalling of the concrete at the base of the tower. Any moisture that penetrates as a result constitutes a risk for the expensive equipment. Thousands of wind power turbines in Europe are already protected with KEMPEROL® products, which are applied in liquid form and therefore adapt perfectly to any surface, making them ideal for this type of application.

Green Roofing at Columbus Square, New York City

Sustainable Design for Green Living Space

Located in the Upper West Side of NYC, this new construction complex on Columbus Avenue provides luxury apartments for sophisticated housing. Oak strip wood floors and floor to ceiling glass windows with view to Central Park on the west and Riverside Park to the east are only part of the amenities. And so are the approx. 130,000 sq. ft. (approx. 11 000 m²) roof gardens – one with an adjacent pool – offering outdoor living space for recreation.

The buildings were finished in 2010/2011 and followed state-of-the-art sustainable design criteria. When it came to choosing waterproofing materials to protect the inhabited and retail space below the large vegetated roofs, cold-liquid applied KEMPEROL® BR was the chosen system, providing a clean, safe and long-term solution. KEMPEROL® membranes are fully reinforced with non-woven polyester fleece and adhere to the substrate over the entire surface. Flashings for drains and pipes are seamlessly integrated into the edge-to-edge membrane.

Green Roof at 775 Columbus Ave.

The waterproofing system is rot and root resistant with FLL approval and provides a maintenance free substrate for a variety of overburdens, e. g. wood decking for the walkways, pavers on pedestals for the terraces, and various components for green roof assemblies including soil and plants. In addition to the roof garden, the main roofs of 808 and 775 Columbus Ave., a cooling tower and a parking garage were waterproofed with KEMPEROL® BR, whereas solvent-free and odor-free KEMPEROL® 2K-PUR was installed on the indoor pool deck area, totaling the project size to 150,000 sq. ft. (approx. 12 600 m²). After completion of work, a 30 NDL Warranty was issued.

Living at Columbus Square fulfills highest standards in today's art of living: an excellent location, outstanding design and the right choice of construction materials – to preserve the buildings and to protect the investment.

Installation of the waterproofing membrane.

Work data:

Project: 6,700 m² Green roof, 808 Columbus Avenue, NYC
Building Owner: 808 Columbus LLC, New York, NY
Specifier: Stellar Management, New York, NY
Installer: KJC Waterproofing, Dumont, NJ
System: KEMPERTEC® D-Primer; KEMPEROL® BR Waterproofing System; KEMPEROL® AC and Sand as alkalinity protection layer for subsequent concrete overburden.

Project: 5,900 m² Green roof, 775/795/805 Columbus Avenue, NYC
Building Owner: 775 Columbus LLC, New York, NY
Specifier: PWV General Contracting Inc., New York, NY
Installer: City Skyline, Inc., Brooklyn, NY
System: KEMPERTEC® EP-Primer; KEMPEROL® BR Waterproofing System; KEMPEROL® AC and Sand as alkalinity protection layer for subsequent concrete overburden; KEMPERDUR® EP-Finish

Leicester Mercury building (UK)

Flat Roof Refurb Now Well Into Its 4th Decade

One of the very first KEMPEROL® flat roof repair projects to be undertaken in the UK is still going strong after 35 years, underlining its excellent performance and reliability.

It was back in the 1970's that the main roof of the Leicester Mercury building was repaired using KEMPEROL® V210 cold liquid applied waterproofing. Yet when the building was completely refurbished a few years ago the roof, when inspected, was found to require no attention at all. In fact the Mercury's Building Services Manager, Carl Prickett, has been so impressed with the integrity of KEMPEROL® waterproofing that he has, over the years, used it to replace other parts of the roof whenever these have failed.

"First we used patch repairs to stop the leaks, but were just chasing our tails", stated Carl. "We tried everything, but with so many awkward details the products never seemed to last more than a few months. KEMPEROL® was new to the UK, so naturally we were a bit hesitant, and although the product claimed a life expectancy greater than 30 years, I remember thinking 'I'll be happy with twenty!'. Now 35 years later it's still as good as the day it went down and has never failed once."

KEMPEROL® cold liquid waterproofing can be used for both new roofs or repairs, is warranted for up to 20 years and has an expected life significantly greater than that.

Work data:

Project: Leicester Mercury
Materials: Kemperol V210
Contractor: Granflex

Leicester Mercury Building