

# Facilitate

BELZONA'S FACILITIES MAINTENANCE MAGAZINE

ISSUE 5

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INSIDE FACILITATE

## FOCUS ON: THE FOOD AND DRINK INDUSTRY

Complete Transformation  
of Disused Warehouse  
into Cold Store

Belzona Seals Cracked  
Flour Silo

and more...

Belzona Eliminates Potential  
Health and Safety Risks

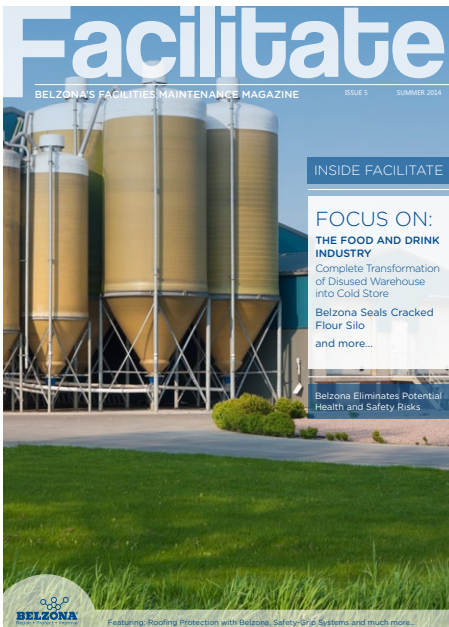
# Belzona SEMINARS

*Advanced Professional Development*

Belzona now offers a range of advanced professional development seminars run by a team of experienced engineers. The aim of these seminars is to demonstrate how polymer technology can reduce downtime, increase efficiency and simplify maintenance procedures.

To view our seminar options and book your seminar visit [www.belzona.com/ukseminars](http://www.belzona.com/ukseminars) or call 01423 567641





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## IT'S BUSINESS AS USUAL WITH BELZONA, GLOUCESTERSHIRE

Established in Yorkshire in 1952, Belzona is a global leader in the design and manufacturing of repair composites and industrial protective coatings. Within the facilities maintenance sector, cold applied and fast curing epoxy repair systems ensure that minimum downtime is incurred during installation, so business can go on as usual.

Belzona was able to draw on these decades of experience in a major

renovation project carried out at a 75-year-old dairy. Cotteswold Dairy Ltd approached Belzona with a project to transform an old, disused warehouse into a cold store.

After a site-survey, Belzona outlined several repair and maintenance solutions that were required to completely transform the warehouse. These included localised repairs to the concrete floors, refurbishment of the vertical columns, kerbstone

bonding and a chemical resistant floor coating incorporating a grip system.

The dairy, established in 1938, sought a comprehensive solution where the rebuilding material, on-site training and a 24 hour support service could all be provided from one source. It was further essential that minimum disruption was incurred during installation as the refurbishment needed to be carried out



*Before application*



*Application of Belzona 5231*



*Rebuilt pillar*



alongside a number of other renovation projects.

Belzona systems were chosen. A slurry mix of Belzona 4111 (Magma-Quartz), an epoxy based material designed to protect concrete surfaces from impact and abrasion, was used to bond on the kerbstones. Several areas of floor damage were repaired with Belzona 4131 (Magma-Screed), a non-porous concrete resurfacing system.



A lightweight material, Belzona 4141 (Magma-Build), was used to repair damage to the vertical concrete columns. This material ensures the columns will remain thoroughly protected within the busy working environment as it is designed to combat numerous types of deterioration including chemical attack and carbonation of concrete.



The floor and kerbstones were then coated with Belzona 5231 (SG Laminate). This is a high-build, solvent-free coating ideal for providing protection against the pressure jet washing, sanitising agents and chemicals used on the site. As it can be difficult to attain a seamless finish when coating large floor areas, a team of several people lined up and applied the coating simultaneously. This ensured a consistent layer of coating across the substrate was achieved. Extra aggregate was added to the coating before it cured in order to create a safety grip surface and prevent slippages in the cold store.

Belzona was able to specify the appropriate materials and provide on-site training and guidance at every stage of the project, ensuring the dairy's long-standing reputation for high quality produce and service was upheld at every stage of application.

## BELZONA 4111 (MAGMA-QUARTZ)

Multi-purpose concrete repair composite

Additional applications include:

- Floors • Ramps • Stairways
- Chemical Storage Areas • Loading Docks
- Machinery/Production Areas
- Channels and Gratings

Contents 15kgs

Information and protection of concrete

With Belzona know-how, this situation was resolved quickly and efficiently leaving the area protected from any potential health and safety hazards.



*Damp and dirty pit area*

## GRIP SYSTEM SURFACE PROTECTION WITH BELZONA, HEREFORDSHIRE



*Area preparation in progress*



*Rebuilding of damaged floor with Belzona 4131*

Slip reduction surface provision is a solution often sought by facilities managers, as an effective safety-grip system plays a critical role in ensuring a safe working environment can be maintained. It is essential that stringent health and safety standards are upheld at all times as any facility can be audited by a governing body at any time. The consequences of this can be detrimental as if the facility is deemed unsafe, it can be shut down immediately as a result.

Belzona ensures that this is not the case, as demonstrated in a recent application carried out at the facilities of a leading cider producer. The client required a safety grip system to be applied to a deteriorated floor located in a damp and dirty pit area. The

floor had accumulated a lot of dirt, making the area highly unhygienic and therefore susceptible to a number of health and safety issues. The Belzona solution was chosen for this project due to its many years of proven success on the site.

For the application, all loose material was firstly removed from the substrate before it was cleaned and then rebuilt with Belzona 4131 (Magma-Screed). This is a high performance, non-porous resurfacing material designed to protect concrete against the effects of abrasion, impact, vibration and chemical attack. This material cures quickly, is resistant to a broad range of chemicals and is impermeable to water. These qualities ensure the substrate will remain protected even

when it is subjected to the aggressive chemicals used on the site.

Following this, the floor was coated with Belzona 5231 (SG Laminate), a two component coating system incorporating an aggregate that is designed for floor areas where chemical, abrasion and slip resistance is required. This material will protect the floor from chemical attack, extend its life and reduce the potential for accidents. This coating also provides a seamless finish, leaving the floor protected as well as ensuring the appearance is aesthetically pleasing.

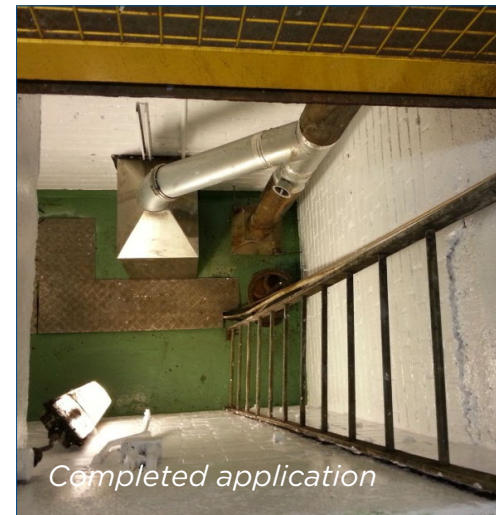
With Belzona know-how this situation was resolved quickly and efficiently leaving the area protected from any potential health and safety hazards.



*Completed application*



*Completed application*



*Completed application*

## BELZONA 4131 (MAGMA-SCREED)

High performance resurfacing screed

Additional applications include:

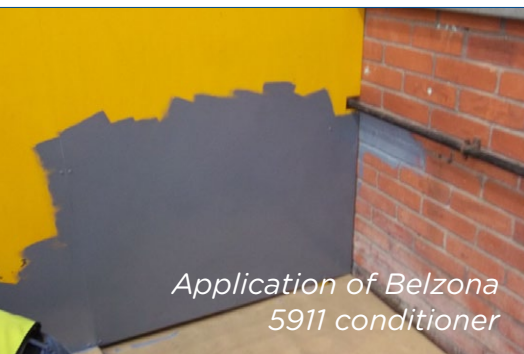
- Floors • Ramps • Stairways • Walkways
- Chemical Storage Areas • Loading Docks
- Machinery/Production Areas





*New, brighter, cleaner working area*

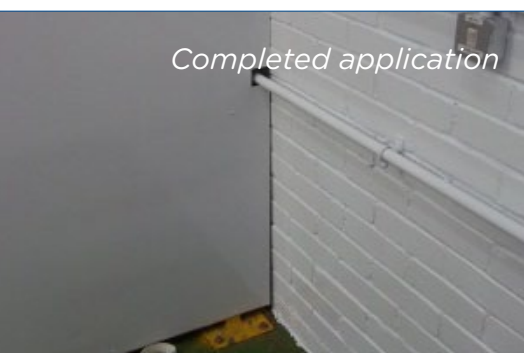
# BELZONA ENSURES CLEAN AND HYGIENIC WORKING ENVIRONMENT, HEREFORDSHIRE



*Application of Belzona 5911 conditioner*



*Application of first coat of Belzona 5111*



*Completed application*

With wall repair and protection, conventional methods such as tiling, general paint and metal sheeting can present a number of issues. For example, paint often fails to provide the level of chemical protection and durability required, whilst metal sheeting (stainless steel) can be very expensive. Not only do Belzona repair composites and coatings provide a cost-effective way to ensure walls are protected against chemical, erosion and corrosion attack, but they also exhibit a number of other key benefits.

These benefits can be identified in a recent application where a leading cider producer required a solution that would give the internal walls of an engineer's workshop exceptional chemical

resistance and that would also provide a hygienic, wipe clean surface and brighten up the overall appearance of the workshop.

Belzona was able to fulfil all of the client's requirements, specifying Belzona 5111 (Ceramic Cladding), a coating designed specifically for the long-term protection of metallic and non-metallic surfaces. This coating offers extreme hardness and chemical resistance, giving the walls a robust protection from deterioration caused by chemical, abrasive and corrosive attack.

The extreme durability of Belzona 5111 protects the walls from the abrasive chemicals handled in the workshop and ensures they



will withstand contact with a variety of cleaning agents used on the site. This material further fulfilled the client's requirement to improve the appearance of the workshop as it gives a seamless and aesthetically pleasing finish, making it the ideal solution for brightening up the space.

For the application, all contamination and loose substrate matter was removed before Belzona 5911 (Ceramic Conditioner) was applied. The conditioner, designed specifically for porous surfaces, was allowed to dry before Belzona 5111 was applied on the entire workshop surface.

The client was fully satisfied with the Belzona solution as the workshop is now not only protected from chemical, abrasive and corrosive attack, but also boasts a bright, aesthetically pleasing appearance.



## BELZONA 5111 (CERAMIC CLADDING)

Coating with exceptional durability and chemical resistance

Additional applications include:

- Chutes • Hoppers • Walls • Fan Blades
- Tanks • Pipes • Masonry
- Decorative Areas • Structural Steelwork
- Cooling Towers • Bridges • Floors



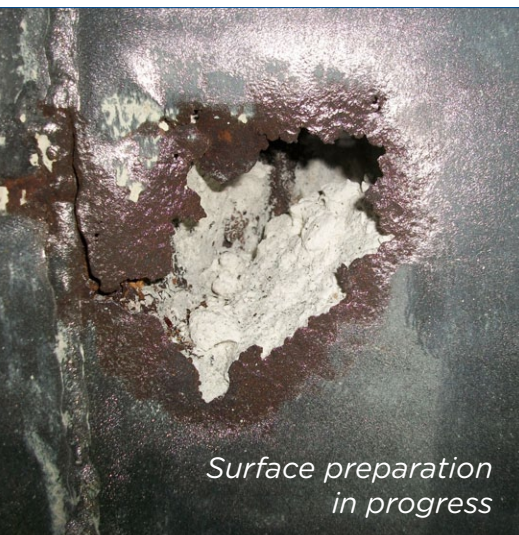


*Through-wall defect*

## BELZONA SEALS FLOUR SILO WITH COLD PLATE BONDING REPAIR, GLASGOW



*Through-wall defect*



*Surface preparation in progress*

A flour silo in a mill was experiencing corrosion issues due to water being held on the outside of the wall. A through-wall defect consisting of a hole and a crack had developed a few meters from the base of the silo. The hole was 60mm in diameter, and the crack was 550mm linear along the weld seam and had a 120mm propagation upwards.

A repair was needed to seal the defect. The outside of the silo was completely inaccessible and due to the potentially explosive atmosphere (ATEX 100), hot works such as cutting and welding were restricted. Alternative repair methods such as using a patch would have created a ledge where flour could gather and potentially lead to unacceptable hygiene issues. The repair also needed to be carried out within a short

time frame due to production requirements around the affected areas.

A Belzona cold plate bonding solution was chosen. The crack was first terminated by drilling and tapping each end before the whole area was prepared using a pneumatic MBX® Bristle Blaster®.

This removed the existing coating and created a surface profile in the metal (mild steel). Pre-fabricated plates were then bonded in place with Belzona 1111 (Super Metal). This is a versatile, two component repair composite perfect for repairing damaged metal substrates as well as bonding metal plates without the use of hot work. The plates were then filleted around the edges creating a smooth and tapered finish.

The entire area was then coated with two layers of Belzona 1341 (Supermetalgilde), a coating designed for the protection of metals from the effects of erosion-corrosion. This further provided a super smooth finish, and the low friction qualities of Belzona 1341 prevented any hang-up of flour over the repair area thus successfully eliminating any potential hygiene issues.

The Belzona cold applied and cold curing repair provided a quick and hazard free solution. The solvent free materials were safely applied in this confined space without the need of specialist tools or hot work, minimising safety hazards and downtime.



*Plates bonded in place with Belzona 1111*



*Surface preparation in progress*



*During application of Belzona system*



*Area overcoated with Belzona 1341 to prevent flour hang-up*

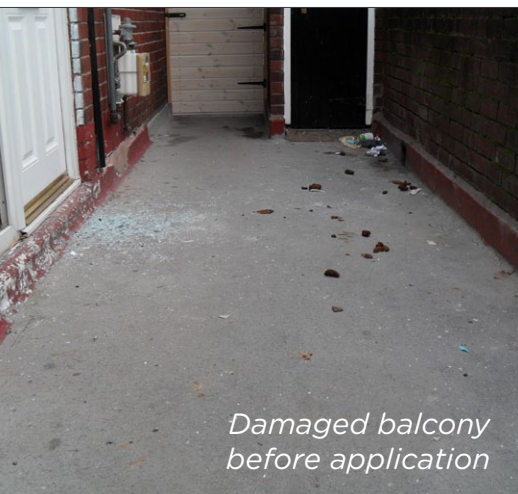
# BELZONA REPAIRS AND PROTECTS LEAKING BALCONY, MERSEYSIDE



Repair materials and composites are often used in roof repair and waterproofing as they provide a cost-effective, time-saving alternative to installing new roofing systems. However, these often contain hazardous solvents that can create numerous health and safety implications and incur long disruptions. This is unacceptable and highly impractical when a repair is required in public and commercial areas. As Belzona materials are water based and low VOC, these qualities help eliminate potential health and safety issues.

thickness during application and after cure.

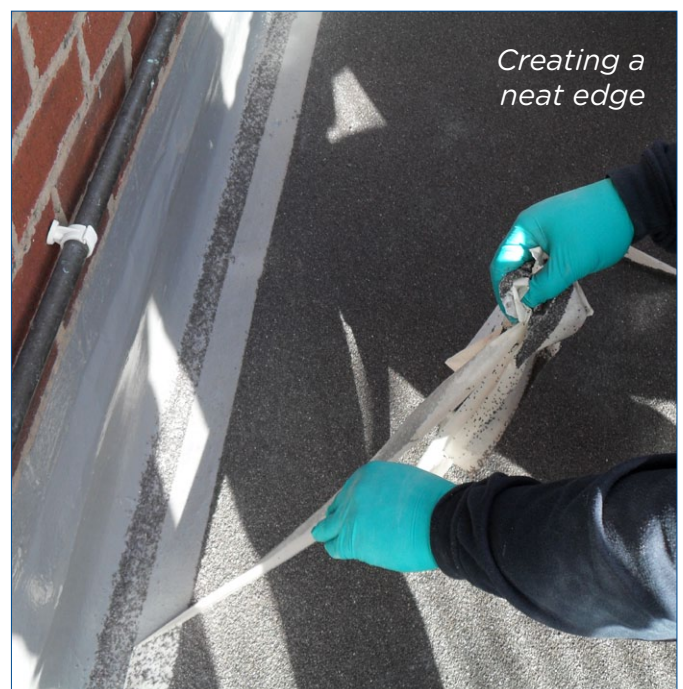
This method provides a beneficial alternative to using solvented systems. These systems are susceptible to shrinkage when curing, leading to pinholes or insufficiently coated areas which can then lead to failure. Solvented systems would also have to be applied in thicker coats to ensure this doesn't happen, which makes them more expensive due to coverage rate.



Belzona low odour materials ensure that there are no harmful vapours escaping when the material is curing; this enables applications to be carried out in enclosed spaces and public areas. Solvent free systems also ensure that the material will remain the same

Belzona roofing membranes not only eliminate health and safety concerns but are also cost-effective, non-intrusive and exceptional in terms of durability.

The benefits of using Belzona membranes can be identified in an application carried out on a 90m



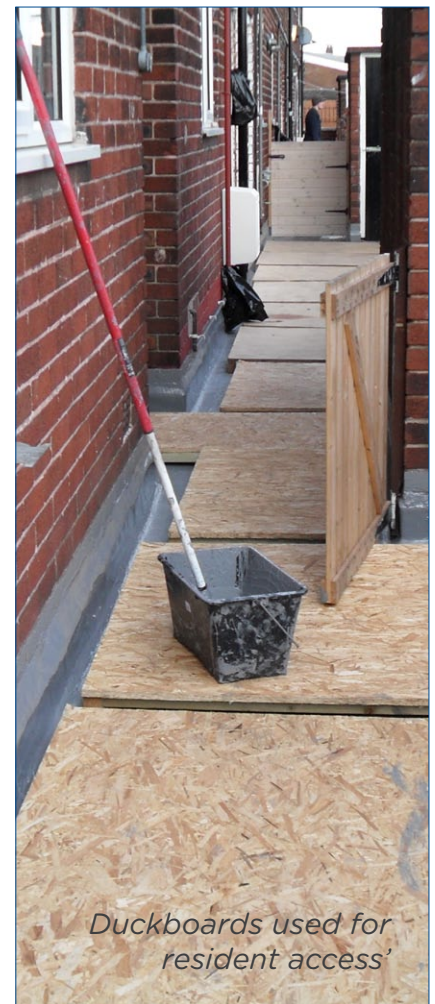
long concrete balcony belonging to a block of flats. Over the years, the cantilevered balcony had dropped allowing a gap to form between the wall of the flats and the balcony itself. This was causing serious problems as water was leaking through the gap into the shops below.

The Belzona solution was selected as the low odour properties of Belzona materials ensured that the residents encountered minimum disruption during the course of the application. First, Belzona 4111 (Magma-Quartz) was used to rebuild the damaged masonry. This material was chosen due to its outstanding ability to cure quickly at ambient temperatures and create a strong molecular bond with dissimilar substrates. Belzona 4111 is ideally suited for repairs to horizontal surfaces subject to abrasion, impact and vibration,

but may also be applied to vertical substrates up to 6mm in thickness. It will bond strongly to most surfaces including concrete, brick, marble, stone, steel and other metal substrates.

After the leak was sealed, the entire area was encapsulated with a fully reinforced Belzona 3111 (Flexible Membrane) system. In order to create a hard wearing grip system, a further coat of Belzona 3131 (WG Membrane) blended with Belzona 9231 (Surefoot Aggregate) was applied.

Belzona was able to meet the specific requirements of the client. Due to the logistics of the long narrow balcony and to provide access to the tenants, Belzona was also able to provide duckboards for access during application.



# TANK LINING PROTECTED FROM CORROSION ATTACK, GERMANY



After 60 years in service, two neutralisation tanks at a leading German brewery had suffered extensive internal corrosion damage. The internal lining of the tanks had deteriorated greatly and the problem needed to be promptly addressed in order to prevent acceleration of the deterioration.

Due to the structural design of the cellar where the tanks were located combined with

the large size of the tanks, 12m and 9m long respectively (both with a diameter of 2.6m), a replacement would have been incredibly complex, costly and time consuming.

By using the Belzona solution, the brewery was able to bypass a lengthy replacement process and thus avoid any potential loss to business. The entire internal area was coated with Belzona 5811 (Immersion Grade), a corrosion resistant protective coating designed specifically for surfaces operating under immersion conditions in contact with aqueous solutions.

As the chemicals used on the site were aggressive, the

brewery commissioned the testing of five Belzona products to verify their chemical resistance. In the testing, the materials were exposed to four acidic and basic chemical solutions with different concentrations for six months.

According to the testing outcome, Belzona 5811 displayed the best result by not exhibiting any optically detectable surface damage, and was therefore selected.

For the application, the edges and detail areas (approximately 252m<sup>2</sup>) were stripe coated before two coats of Belzona 5811, consisting of 176 litres, were applied by airless spray to the internal area of the tanks.

## BELZONA 5811 (IMMERSION GRADE)

Corrosion protection of metallic and non-metallic surfaces operating under immersion

Additional applications include:

- Bunds • Tanks • Clarifiers
- Water Boxes • Cooling Tower Pans
- Pipes • Pumps • Marine Buoys



The coating was post cured at 40°C - 50°C in order to accelerate the cure time.

The Quality Control Inspection via spark test (4kV) showed no holidays, the specified layer thickness was achieved and the tanks were put back into operation on the ninth day.



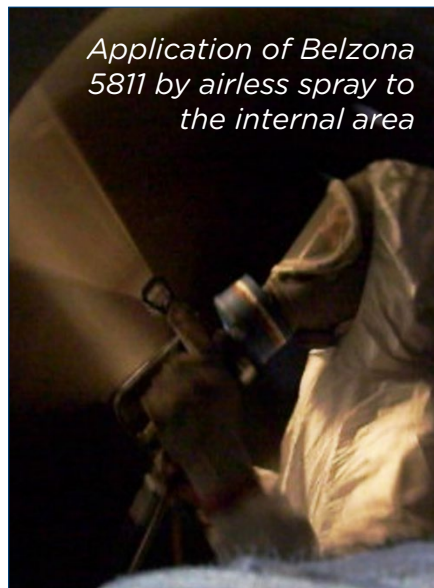
*Internal corrosion damage*



*Internal corrosion damage*



*Temperature between 40°C - 50°C*



*Application of Belzona 5811 by airless spray to the internal area*



*Post cure of coating*



*Tank successfully lined*



*Roof cleaned and prepared*

# BELZONA REPAIRS HAZARDOUS LEAK ON TOP FTSE 100 COMPANY ROOF, LONDON

Damaged roofs are a common problem found within the facilities maintenance sector. Roofs are likely to suffer damage and deterioration due to weathering, which can lead to structural defects and consequently disrupt work-flow and cause numerous safety hazards. Repairing this damage using common roof repair techniques has a number of drawbacks; application of bitumen or felt can only offer a temporary solution and a complete roof replacement would be highly time-consuming and expensive.

Belzona offers an alternative solution avoiding the issues found in these types of conventional repairs. Belzona's liquid applied roofing membranes can be

easily installed to provide a long-term waterproofing and weatherproofing solution. Following a successful roofing application, Belzona was approached again by a top FTSE 100 company to repair and protect a leaking roof in central London.

Despite the roof, covered in a single-ply membrane, appearing to be in good condition, it was found to be leaking in several places. The client, a high profile finance company, required a quick, efficient and long-lasting solution to this problem as the leak was above a plant room containing sensitive electrical equipment, making it a business critical situation.



*Surface being conditioned to ensure good adhesion*



*First coat of Belzona 311 applied*





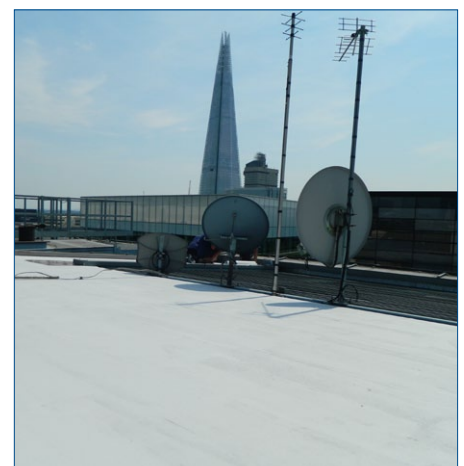
As the area was highly populated, the client also sought a low odour solution in order to ensure minimum disruption during application. After reviewing a number of options, they decided to use Belzona 3111 (Flexible Membrane) as its low odour and cold curing formulation makes it ideal for use in public and commercial locations.

For the application, the upper level roof was cleaned and prepared before application of a fully reinforced Belzona 3111 system.

The client expressed themselves thoroughly satisfied with the application. The Project Co-ordinator said, "The contractors who carried out the works did a great job in a professional

manner and we experienced no interruptions to business or complaints throughout the entire project." He further added, "I will definitely be recommending Belzona in any future projects where their system can be utilised."

“The contractors who carried out the works did a great job in a professional manner and we experienced no interruptions to business or complaints throughout the entire project.”  
Project Co-ordinator



# ROOFING PROTECTION WITH BELZONA

Roof integrity can often be jeopardized by various factors such as movement during freeze-thaw cycles, physical damage, rain and adverse weather conditions. These effects can prove highly detrimental and damaging to a roof's waterproofing capabilities.

All roofs can be compromised by these effects but flat roofs in particular can deteriorate extremely quickly. The lack of surface run-off causes this rapid deterioration as it produces a high quantity of surface water which can penetrate through the

substrate. Other areas susceptible to damage include joints and seams, flashings, gutters and glazing bars, as these are areas in which water can easily accumulate.

Belzona's liquid applied membranes offer a competitive roof repair solution. Belzona 3111 is a liquid applied, one-component roofing membrane with a water based, low odour formulation that eliminates health and safety issues of other traditional repairs, providing a cost-effective and durable alternative.

Belzona 3111 will:

- Water and weatherproof the roof
- Simplify roofing maintenance
- Provide long-term protection – 20 years +
- Bond strongly to all types of roofing substrate
- Follow complex roof contours
- Avoid hot work and odour issues/implications
- Remain flexible in service



# BELZONA AUTHORISED COATING CENTRES

In addition to Belzona Technosol, Belzona's specialist application services division, to further improve levels of service, Belzona Polymerics also works in partnership with a number of Authorised Coating Centres to provide a full turnkey repair solution on rotating equipment. This means that each centre is recognised by Belzona Polymerics to provide a specialist service for the rebuilding, long-term protection and efficiency enhancement of rotating equipment such as pumps, fans and blowers.



## BELZONA 3111 (FLEXIBLE MEMBRANE)

Solvent free microporous coating

Additional applications include:

- Upstands • Glazing Bars • Gutters
- Flashings • Joints and Seams
- Coping Stones • Parapet Walls
- Skylights





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