Capeland Ltd
Industrial Flooring Contractors

Project managed & installed by...

vebroflex at Horizon Cruise Terminal, UK

vebro

PROJECT SHOWCASE

Cruising into action! Vebro Polymers and Capeland sail to rescue new terminal floor

Originally opened in 2021 following a series of pandemic-related challenges, The Horizon Terminal is an award-winning, world-class deep ocean cruise liner facility located at the Port of Southampton.

Welcoming passengers for over 100 years, the Port of Southampton is the UK's largest cruise port. Host to a wide variety of cruise lines including P&O Cruises, Cunard, Royal Caribbean and Princess Cruises, passengers can expect to set sail for the Norwegian Fjords, Canary Islands, Mediterranean, Spain & Portugal as far as the USA and Caribbean.

Featuring a huge, dramatic sweeping roof, the new Horizon Terminal building makes a confident statement about the future of the cruise sector and its growing popularity amongst British tourists.

The terminal has been designed to accommodate wide-berth, deep-ocean cruise liners as well as to allow over 6,000 passengers to disembark and embark within a day.

It is the fifth terminal building on the wider Southampton complex and accommodates security, customs, check-in, and baggage handling facilities over two floors.

The Horizon Terminal was named by a local resident following a competition that welcomed name suggestions from across the world. The name, Horizon, represents a bright new chapter for cruising which is an iconic part of the heritage of the city of Southampton and its future.

In the last few years, ABP has invested £80m in its cruise infrastructure, with sustainability playing a key role. The new Horizon Terminal marks their commitment to the future of cruise, combined with the ports unrivalled sea, land and air access, cements its reputation as Europe's leading cruise turnaround port.

The statement building makes a significant contribution to the surrounding area, cementing Southampton's reputation as a premier cruise destination throughout the world. Horizon signals a bright new chapter for cruise, which is an iconic part of the heritage in the city of Southampton and its future.

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Client: Associated British Ports (ABP)
Location: Southampton, UK
Architect: Atkins
Main contractor: Brymor Construction

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Before: tyre marks caused by premature trafficking

Before: protruding steel reinforcement fibres

Before: unsightly & dangerous

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spotlight on the floor

a problematic maiden voyage

In keeping with the industrial aesthetic of the terminal building, the entire ground floor had originally been specified by the concept architects Atkins as a pigmented, power-floated concrete slab, which was later sealed with a durable, pigmented, matt-finish, aliphatic polyurethane seal coat.

As a protective system, this would offer the necessary strength and durability over several years to withstand heavy volumes of foot and rubber wheeled traffic and therefore the expected wear and tear associated with the bustling terminal building.

However, a calamity of issues related to the ground floor resulted in Associated British Ports consulting with flooring specialists, Vebro Polymers on a remedial specification for the entire area within less than two years of first opening the doors to passengers.

Firstly, rising moisture in the newly laid power-floated concrete had caused the polyurethane seal coat to bloom in sporadic patches all over the surface of the floor. Blooming, or a white blush that builds up on the surface of a floor, occurs when damp concrete is sealed before fully curing. In worst-case scenarios, this can cause the seal coat to de-bond and lift.

In addition to this, upon further inspection it was clear that the surface had also been trafficked before the material had fully cured, leaving unsightly tyre marks permanently etched into the clear polyurethane seal coat.

This left the surface looking old, worn, and battered – far from the fresh welcoming aesthetic that Atkins had originally envisaged.

More worryingly, a pressing health and safety issue further expedited the need for a replacement finish, but to understand the severity of the problem, it must be noted that the clear polyurethane material chosen to seal the concrete surface is a 100% solids thin-film sealer. Although robust, and hardwearing, it has little to no body or thickness.

One issue that had been overlooked at specification stage, was the steel reinforcement fibres that had been added to the concrete mix to provide enhanced crack-resistance in the hardened concrete, as well as increased resistance to damage from heavy impact.

Despite the concrete being power-floated for a flat-level finish, these steel fibres had penetrated the surface of the slab. For unknown reasons, the polyurethane seal coat was applied without further attention to de-nibbing the protruding reinforcement fibres, resulting in these also penetrating the thin-film seal coat.

Now, this was particularly problematic in the context of the purpose of the building. Passengers being asked to remove their shoes at security were cutting the soles of their feet or tearing their socks. Passengers were reporting damage to bags and other items of clothing because of contact with the floor. Tape was being rolled out on high-traffic areas to reduce the issue with a temporary fix, leaving a patchwork of vinyl across the floor and increasing trip hazard risk.

Something had to be done!

finding comfort in **vebro**'s solution

Representatives for ABP contacted Vebro through the website, after identifying that the company specialised in seamless resin flooring solutions for large-scale high trafficked commercial and industrial environments.

Following an initial phone consultation, a site visit was arranged for Vebro Polymers to inspect the surface with the view to proposing a remedial solution to counter the above operational issues.

After consultation involving hard-samples, it was determined that **vebro**flex Comfort UV, a seamless, liquid-vinyl, polyurethane comfort floor with a pigmented matt-finish seal coat would provide sufficient body to bury the steel reinforcement fibres – eliminating any further risk of damage – as well as tackle the aesthetic problems caused by both the blooming and tyre marks.

Dealing with an operational site, requiring a complete ground floor refurbishment was always going to be tricky to undertake. ABP had to identify a quiet period and make plans to redirect both cruise liners and passengers to other terminals located across the complex to allow Capeland full access to the site.

A three-week window in early December was earmarked for completion of all works – this was to include emptying the area of all equipment and fixtures, preparing the existing concrete surface by grinding, priming the floor, laying the comfort bodycoat, sealing the surface, allowing sufficient time for the resin to chemically cure, and finally putting everything back prior to re-opening the terminal doors.

Redirecting passengers and re-routing liners throughout the project were deployed without a hitch. However, the December weather wasn't as kind to the specialist application team on the ground. Following a full prime of the existing concrete slab, inclement weather overnight led to a leak in the roof. Although this cost the team a day waiting for the leak to be fixed and the site to become water-tight.

Surface preparation involved a full grind of the entire surface to provide a mechanical key that would ensure sufficient bond.

Typically, liquid applied comfort flooring systems are installed as one coat per day, with each layer left overnight to reach sufficient cure and bond strength. Areas should be sealed to assist with dust control and UFH (where applicable) should be turned on prior to install.

ABP were so delighted with the finished result at the Horizon Cruise Terminal, it will be rolled out to other buildings located across the complex over the coming years.

The main benefits of comfort flooring to end users are…

- Enhanced user comfort, delivers a cushioning effect underfoot
- Ergonomically warm & can be used in conjunction with underfloor heating systems
- Formulated from natural biopolymers & meets low emissions criteria (AgBB)
- Can incorporate rubber matting for enhanced cushioning & sound absorption (up to 20 Db)
- Incorporates a durable, wear & scratch resistant sealer to withstand heavy use from wheeled castors
- Self-smoothing, seamless, jointless, hygienic & easy to both clean & maintain
- Excellent slip resistance (R10 – R13) suitable for use in high trafficked areas
- Excellent UV stability will not yellow or discolour over time
- Available in an unlimited range of colours as well as decorative & motion finishes

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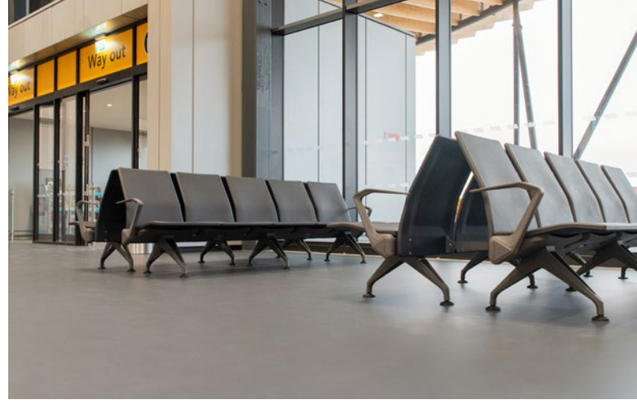
Resin applicator: Capeland Limited
Material supplier: Vebro Polymers
Total floor area: 1,400 m²



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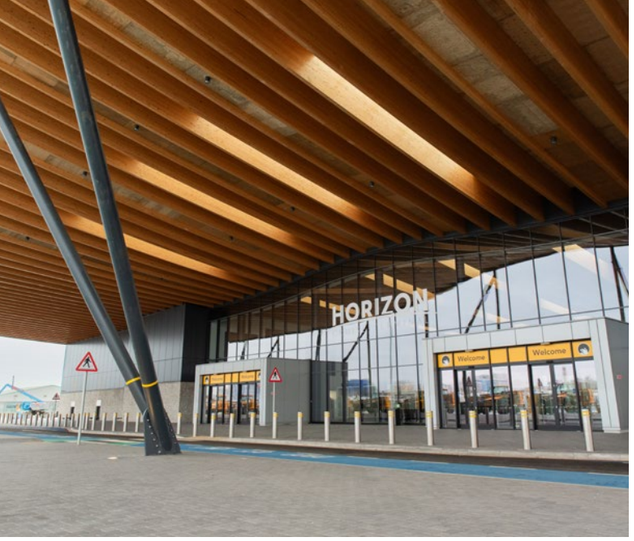

a voyage of **sustainability**

As Britain's busiest cruise port, millions of passengers pass through Southampton every year. As such, it was vital that sustainability remained at the heart of a new-build construction of this magnitude.

The new terminal is thought to be the greenest in the UK, having won SECBE – Sustainable Project of the Year over £10 million 2023 amongst a host of other green construction and design awards.

The building features long span glulam beams that were fabricated off-site together with more than 2,000 roof mounted photovoltaic (PV) solar panels to generate clean energy.

Shore power connectivity has also been included as part of the scheme – making Horizon the first major commercial berth and cruise terminal to be fitted with this technology in the UK.

This enables vessels to plug into the local power supply rather than using on board generators, and thus significantly reducing carbon emissions, and improving air quality by turning off engines.

The investment into future proofing cruise infrastructure through the provision of Horizon represents a solid commitment from APB to making the industry greener and with electricity demand only set to increase in the coming years, it is hoped that the project will set a benchmark for development of this type going forward.

In keeping with the green vision and sustainable framework laid out by the main contractor throughout the original build, it was important to ABP that these same values be adopted throughout the floor refurbishment of the ground floor.

Vebro Polymers' **vebro**flex Comfort UV system is a multi-layer, water-based polyurethane flooring system formulated from natural biopolymers.

Comfort resin flooring is made up of layers of flexible polyurethane resin that is liquid-applied onto a primed concrete substrate or alternatively a rubber mat, rubber crumb or cork underlay.

Comfort resin flooring is frequently referred to as liquid-vinyl or cushioned resin flooring. All these terms; 'comfort', 'cushioned', 'vinyl' – refer to the floors' somewhat unique properties of providing a cushioning effect underfoot…this quite literally makes these floors more comfortable, warmer, and surprisingly soft underfoot for those using them to walk and work on.

vebroflex Comfort UV meets the Committee for the Health Assessment of Construction Products (AgBB) low emissions criteria, which has been developed with LEED in mind and is particularly popular with low-energy developments.

The AgBB evaluation scheme sets out the quality standards for building products intended for use indoors that are relevant to health. In doing so, the scheme fosters the innovation and development of low to zero emissions products.

The AgBB scheme has been developed in compliance with several international standards, including ISO 16000 standards, BREEAM and LEED, ensuring certified products meet the criteria set out, as well as contribute to building credits where applicable.

The low emissions status of polyurethane comfort resins offers significant advantages over the closest alternative, being sheet vinyl. The manufacture of vinyl flooring can cause toxic outgassing to occur after the floor is installed. This can release VOCs that can lead to negative health issues for the building's users and occupants.

Resin comfort floors have a very cost-effective life-cycle profile in comparison to alternative floor coverings.

With correct care and maintenance, resin comfort floors can last well more than 10, 15, 20 years, even longer still with the routine refurbishment of the topcoat. Although a higher upfront square metre rate install cost, the reduced maintenance and energy costs over time combined with an enhanced lifespan makes resin comfort floors the economical choice over the footprint of its service life.

At the end of their lifespan, resin comfort floors can simply be overlaid whereas sheet vinyl or linoleum is most often non-biodegradable, rarely recyclable and often disposed of in landfill sites.

vebroflex Comfort UV was innovated to provide a higher performing, longer lasting and more environmentally sustainable alterative to sheet vinyl flooring, which has long been used in commercial premises as a protective floor covering.

Sheet vinyl offers significantly reduced thermal, wear and chemical resistance properties than seamless polyurethane comfort resin. In fact, sheet vinyl is very easily damaged, rubber-backed mats or rubber soled shoes can scuff the floor causing permanent discolouration and some cleaning products are known to remove the sheen from the finish entirely.

Liquid spillages will permeate the material, making rips and tears more likely to occur as well as encouraging mould and mildew to form.

UV exposure from strip lighting is known to fade vinyl flooring – fast! Whereas the aliphatic nature of the **vebro**flex material ensures that floor remains colour stable for the long-haul.

Finally, the composition of vinyl flooring can cause toxic outgassing to occur after the floor is installed, releasing VOCs that can lead to negative health issues. Non-biodegradable rarely recycled and often disposed of in landfill sites. Once damaged, requires ripping up and replacing.

As a result, comfort resin flooring has become increasingly popular in institutional facilities over the last few years including schools, colleges, healthcare, medical-care, and public leisure facilities.

During the installation of **vebro**flex Comfort UV at Horizon Cruise Terminal, all empty packaging and recyclable plastic and metal containers were removed from site and disposed of in a way that allowed materials to be reprocessed for future use. Any waste considered hazardous, was collected by certified waste management services, and disposed of in line with Hazard Waste regulations.

working **together**…

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Capeland Ltd
Industrial Flooring Contractors

ABP | ASSOCIATED BRITISH PORTS

AtkinsRéalis

vebro polymers.com

Please note: the information in this guide is subject to change and the most recent technical data should be sought for accurate, up-to-date product or system information. Errors & omissions excepted. The applied colours may differ from the examples shown within this guide. Actual samples should always be viewed before making a final decision, especially if colour accuracy or matching is key to your decision.