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FAST FACTS

Penetron products
significantly increase the
durability of concrete
structures.

Internal Waterproofing for Concrete

Penetron® Industry Newsletter

November 2011



Welcome to another edition of the Penetron International newsletter. As 3rd generation crystalline admixtures have gradually become the industry standard for protecting concrete in critical conditions, Penetron Admix is now a leading force in the PRAH (Permeability Reducing Admixtures for concrete under high hydrostatic pressure) admixture category.

In this issue, we cover the Green Label Penetron products have just been awarded in Singapore as well as case studies on challenging projects from a handful of different countries. This includes Gardens by the Bay, a spectacular project currently under construction in Singapore – hope you enjoy the read!



Penetron® news



Penetron products awarded the Green Label

Heralding the green revolution, Penetron products have now been awarded the Green label by Singapore Environmental Council (SEC). The SEC is a member of the GEN (Global Ecolabelling Network - www.globalecolabelling.net), which has members in 27 countries and regions worldwide. With the acquired Green label, Penetron Products are now certified to be reducing overall VOC load on the project, thereby enabling the project to earn extra LEED points.

LEED (Leadership in Energy and Environmental Design), an internationally acclaimed green building certification system was developed by the [US Green Building Council \(USGBC\)](http://www.usgbc.org) in March 2000 in order to provide building owners and operators with a framework for identifying and implementing practical and measurable green building designs, constructions, operations and maintenance solutions.

Through a suite of rating systems, LEED recognises projects which in their endeavour to implement strategies for better environmental and health performances add value to the environment. These rating systems are developed through an open, consensus-based process led by [LEED committees](#) comprising of diverse groups of volunteers representing a cross-section of the building and construction

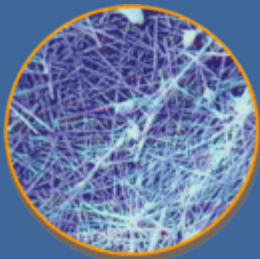
industry. Key elements of the process include a balanced and transparent committee structure, technical advisory groups that ensure scientific consistency and rigour, opportunities for stakeholder comments and reviews, member ballot of new rating systems, and fair and open appeals.



Penetron® Worldwide



Gardens by the Bay – Singapore



An intricate web of insoluble crystals forms in the presence of Penetron® and H₂O creating a permanent protective seal



Witness Penetron's crack sealing ability



Three distinctive waterfront gardens in the heart of Marina Bay that will define Singapore as the world's premier tropical garden city. The Conservatory Complex within the Gardens is conceived as an all-weather 'edutainment' space, which will serve as an architectural icon, a horticultural attraction, and a showcase of sustainable energy technology. The 1.2-hectare Flower Dome is one of two cooled conservatories which are central to the Gardens design concept. It will replicate the cool dry climate of the Mediterranean and semi-arid subtropical regions, and feature an uncommon range of flowers and plants such as baobabs, olive trees, and date palms. The project represented severe waterproofing challenges as it is built entirely on reclaimed land and right next to the ocean.

The architects, Wilkinson Eyre Architects and CPG Consultants in conjunction with Meinhardt Infrastructure and Atelier One, needed no further evidence after having witnessed the performance of Penetron products on Changi Airport Terminal 3.

18'300 m³ of concrete were cast with Penetron Admix in the base slab and walls, Penebar SW-55 in the construction joints and Peneseal Pro on the mountain walls. This part of the project was completed successfully in 2010.



Send to a friend or colleague.



Jatiuca Trade Center (JTR) – Alagoas (Brasil)

Jatiúca Trade Center is a unique and grand-scale project in Maceió, capital of Alagoas, in the northeast region of Brazil, famous for its beautiful beaches with green and warm water.

A new concept was developed which includes residential, commercial and leisure facilities encompassing a total area of 13'000m². Built by a Joint venture between CIPESA and GAFISA, one of the biggest contractors in Brazil, JTR offers a great quality of life, service and high tech in a superb location. It was quite a challenge to provide 12'000 parking spaces for 9 towers right in front of the beach. The basement car park stretches over 2 basement levels and the base slab was completely waterproofed with Penetron Admix and Penebar SW-55 in the joints. The challenges of completely waterproofing the 13'000 sqm basement slab as well as fulfill the other requirements of limiting excavation works and speeding up the construction schedule, were successfully accomplished with the Penetron system.





Novotel Hotel, Andheri, Mumbai

The Novotel Hotel, an upcoming four star hotel is located near the Mumbai International Airport entailing five basements and G+14 floors. The basement at -29.5m below ground level is the deepest basement in Mumbai. Having previously been a part of Novotel Pune Project, Penetron was awarded this Mumbai project by India Blue Mountains - the clients. The waterproofing amongst other areas covers the basement, underground tank and a sewage treatment plant encompassing 20'000sqm quantum of work. A combination of Penetron Admix (in the raft concrete & retaining walls), Penetron Plus Dry shake (on PCC below the raft) and Penetron Slurry application (on the walls) has been used.

The main contractor of the project are Mumbai-based Gammon India. Singapore-based Confluence Consultants are the Project Management Consultants of the project.



Budapest's City Park ice-skating rink renovation - Hungary



Central Europe's biggest ice-skating rink located in Budapest's City Park (Városliget) is a tradition for ice-skating enthusiasts ever since its creation in the first half of the 19th century. It's long history started with the formation of the Pest Ice-skating Association in 1869 and a tiny wooden structure for warming and changing. Since then the success story of the extremely popular rink was continued by hosting various events including the first ice-skating competition in 1870. The unification of the two parts of the city (Buda and Pest) resulted in yet another boost in the rink's popularity and a new wooden pavilion was constructed, which was later expanded and rebuilt after damages occurred during World War II.

In 2010 the deputy mayor of Budapest announced that the ice-skating rink in City Park will be renovated for a total amount of EUR 17.6 million. The project included the renovation of the 16'800 square meter ice-rink and the reception building as well as one unrestored wing of the old building that was destroyed during the war. Further the renovation should also boost the number of annual visitors to the rink from 380'000 to 460'000.

While the rink will accommodate ice-skaters and skating events such as the European Speed Skating Championship in 2012 during the winter months, it will be converted into a lake in summer including boat rides, festivals and other events held on a stage built on the water.

The extreme temperature differences (winter/summer, day/night) and the presence of water in direct contact with concrete posed the main challenge for the project and was a key concern for the contractor renovating the iconic ice-rink. In order to protect the sensitive electric wiring and switching cabinets, decision was taken to waterproof and protect 4'000 cubic meters of concrete of the public utility tunnels that would be exposed to about 1 meter of water level on the lake side and 2.5-3.0 meters of ground water from the soil side with a third-generation crystalline concrete admixture, i.e. Penetron Admix.



Concreting with Penetron Admix on site

The main concerns of the contractor in charge of the renovation could be addressed with Penetron Admix. Hairline cracks that had developed during concrete hydration completely sealed within days after ponding the slab, to the complete satisfaction of the project management. After the completion of the renovation project, the enhanced, durable concrete structure ensures the integrity of Budapests' City Park centrepiece for many years to come and allows the city to continue its tradition as one of the ice-skating centres of Europe.



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