Put quite simply, the world needs durable concrete.

It is not acceptable anymore that concrete structures worldwide crumble before their design life expires. Especially since we know the reasons and we have the technology to prevent it. The environmental and commercial cost of decommissioning, demolishing and having to rebuild valuable infrastructure is costing the planet and our economies dearly.

Steel corrosion, freeze-thaw cycles, alkali–aggregate reaction, chemical attack etc., all have one thing in common – they only happen if water is able to get into concrete. Advanced crystalline admixtures now achieve zero water permeability.

The concrete industry has recognized this, leading to a new class of permeability-reducing admixtures (PRAH, see ACI 212.3R-10).

First in this class is a 3rd generation crystalline admixture – PENETRON ADMIX - with the ability to self-heal cracks and completely dry out concrete without affecting concrete slump, strength and setting time.

Recent research results prove that PENETRON ADMIX can extend concrete service life by 60 years or more…

Download PENETRON ADMIX and PENETRON corporate brochures for more information on these topics.

Read on to learn more about how PENETRON products have secured a longer future for various projects around the world.

Jozef Van Beeck
Director, International Sales & Marketing
Alabyano-Baltic Tunnel, Moscow, Russia
Instituto Nacional de Aprendizaje (INA), Cartago, Costa Rica
Tropilight, Escuintla, Guatemala
KPM Resorts&Lagoons, Al Nuwaiseeb, Kuwait
Shinkong Synthetic Fibers Corp., Taoyuan, Taiwan
Kiler Westa Mall, Zonguldak, Turkey
Seaplane Terminal, Rose Bay, Australia

Durable. Trusted. PENETRON. Click here:

How PENETRON helps fight corrosion Click here:
Providing a key link in the Moscow Ring Road highway, the Alabyano-Baltic Tunnel was completed after a lengthy 15-year construction period, which included upgrading the surrounding roads and junctions in the northwest perimeter of Moscow City. The unique feature of the Alabyano-Baltic Tunnel is that the three-lane traffic in each direction runs on top of each other rather than side by side. It also features two transport tunnels (Volokolamsk and Leningrad) and a tunnel for the blue Arbat-Pokrovskaya subway line. The 786m-long (2578 ft.) tunnel opened in June 2015 as a part of the Southern section of the North-West Expressway.

**PENETRON** crystalline material was applied topically to the tunnel walls to help ensure an impermeable concrete structure. **PENEBAR SW** waterstop permanently sealed the resulting construction joints during the pouring of the new walls, creating a completely waterproof tunnel.
The National Institute of Learning (Instituto Nacional de Aprendizaje, INA) is an autonomous institution that provides training services to all people aged 15 years and older to strengthen productivity in various sectors of the Costa Rican economy.

INA's main task is to promote and develop professional training for men and women in all sectors of production to promote economic development and contribute to the improvement of living and working conditions of the Costa Rican people through training, certification and accreditation for productive, sustainable, equitable, high-quality and competitive work.

The main focus lies on providing training courses that do not require the completion of secondary education. Training courses are available all over the country and include courses such as English, tourism, cabinetmaking, computation, food handling, electro-mechanics and others.

For the new INA regional center in Cartago, the consultant Condisa and contractor Constructora Gonzalo Delgado recommended PENETRON for the waterproofing and protection of all concrete. Subsequently, PENETRON ADMIX was applied to the concrete of the potable water tanks, rainwater tanks as well as for the site's sewage treatment plant.
Tropilight, Escuintla, Guatemala

As a manufacturer of quality purees, juices and concentrates of tropical foods (pineapple, mango, banana and papaya), Tropilight S.A. owns the largest and most modern manufacturing unit in Guatemala.

Located in Escuintla, 60km southwest of the capital, Guatemala City, the company produces 36,000 metric tons of purees and 24,000 metric tons of juices annually. The Escuintla plant is a state-of-the-art facility fully compliant with requirements of the FDA (Food and Drug Administration) as well as the AIJN (Association of the Industry of Juices and Nectars from Fruits and Vegetables of the European Union) Code of Practice.

The US$2 million development was executed by TEAM Guatemala, who called on PENETRON to completely waterproof and protect the Tropilight production facility water treatment plant from aggressive chemical environments.

PENETRON ADMIX SR was added to approximately 990m³ (1,300y³) of concrete supplied by Mixto Listo to ensure a water-retaining structure. 170m of construction joints were repaired and sealed using a combination of PENECRETE MORTAR and PENETRON coating.

KPM Resorts & Lagoons, Al Nuwaiseeb, Kuwait

KPM Resorts & Lagoons’ latest addition is located 100km (62 miles) south of Kuwait City on the shores of the Persian Gulf.

The development includes 65 exclusive 3-5 bedroom duplex villas with direct beach access. Additional highlights are lush green areas, three large swimming pools, recreational areas for children and ample parking. The US$40 million development was initiated by Nour Al Manahel Company and built by Al Bhar National Company.
One of the main challenges faced by the Kuwait Project Management consultants was the waterproofing and protection of the three centrally-located panoramic saltwater swimming pools. After comparing several crystalline waterproofing systems, the decision was made to move ahead with PENETRON, since the PENETRON system has an extensive track record of marine projects and displayed the best resistance against seawater.

Kuwait Cement Ready Mix Company supplied the 1,165m³ of PENETRON admix-treated concrete used for the pool structure.

Shinkong Synthetic Fibers Corp., Taoyuan, Taiwan

Shinkong Synthetic Fibers Corporation (SSFC) is a category 1 listed company on the Taiwan Stock Exchange. With more than 2,000 employees and a net worth of US$1.36 billion, SSFC started operations in the late 1960’s with production facilities in Taiwan, Thailand and China.

SSFC produces mainly polyester fibers and polymers including partially oriented yarn (POY), polyester filament yarn, fully drawn yarn (FDY), polyester staple fiber (PSF), polyester draw textured yarn (P-DTY), industrial yarn, polyester pellets, PET bottle grade resin, PET bottles, PET bottle preforms, engineering polymers, optical films, polyester films and A-PET sheets.
In 2016, SSFC expanded its Taoyuan PET plant by adding a new 5-story building with a basement.

In order to prevent moisture penetrating through the raft foundation, the contractor Xu Yuan Construction Co. Ltd. chose a PENETRON solution. Both waterproofing and durability of the 2,500m² (2,990 y²) concrete slab were ensured by a PENETRON dry-shake application, dispersed directly onto the still moist slab and then trowelled into the surface, which allowed a very rapid and deep penetration, sealing the concrete slab.

**Kiler Westa Mall, Zonguldak, Turkey**

The Kiler Westa Mall is a US$30 million development by Kiler GYO, approximately 330km (205 miles) east of Istanbul, in the town of Zonguldak in the Western Black Sea region.

The project is comprised of a shopping mall, private residences and a business center for a total construction area of 50,000m².

High hydrostatic pressure due to the close proximity of the project to a nearby river and a basement below sea level posed a significant challenge for the waterproofing of the Kiler Westa Mall. The client Kiler GYO and contractor Umut Construction chose PENETRON for this critical work due to the effectiveness of the crystalline technology and ease of application.

Concrete supplier Pelenkoglu Concre used PENETRON ADMIX to treat 10,000m² (13,000y²) of concrete in the foundation slab and retaining walls to ensure durability and waterproofing properties of the structure.

**Seaplane Terminal, Rose Bay, Australia**
Located less than 7km (4 miles) from the downtown skyline of Sydney Roads and Maritime Services and Sydney Seaplanes has recently upgraded the seaplane facility at Lyne Park, Rose Bay. The restoration and construction of the new Rose Bay Terminal was based on massive, pre-cast concrete elements built entirely over seawater. **PENETRON ADMIX** was used in the precast elements to ensure impermeability of the structure.

The upgrade to the Rose Bay Seaplane Facility provides numerous benefits to Sydney and the local area by maintaining a historic site, providing improved seruves for seaplane customers and preserving a valuable tourism asset.

Sydney Seaplanes is one of the most popular and well-known attractions in the Sydney area. Built on pylons over the water, the company’s new Rose Bay Terminal was designed with durability in mind. All pre-cast concrete elements, treated with **PENETRON**’s crystalline technology, are now protected from chloride penetration by seawater splashing just below the precast segments.

Substantially reducing chloride-induced corrosion of the steel reinforcement bars in concrete is one of the most important aspects of concrete durability. Concrete dosed with **PENETRON ADMIX** ensures significant reductions in rapid chloride permeability test (RCPT) values (as per ASTM C-1202 and AASHTO T-277 tests) by reducing chloride ion permeability.

As the primary waterproofing and durability-enhancing solution for pre-cast concrete, **PENETRON ADMIX** saves time and costs in pre-cast manufacturing. The admixture is used widely in concrete tanks, pipes, drains and underground tanks, etc. For the Sydney Seaplanes project, over 300 m³ (380 cubic yards) of concrete was used for the Rose Bay Terminal’s pre-cast segments.
The Rose Bay Terminal is the main hub for Sydney Seaplanes. The company operates scenic flights around picturesque Sydney Harbor – including the iconic Harbor Bridge, Opera House and the beautiful surrounding beaches, including the famous Bondi Beach.