

# Cortec's solutions rehabilitate vulnerable structures

*MCI® technology used to restore historical buildings in Europe!*

Saint Donatus, symbol of the city of Zadar is classified among the most famous and most valuable monuments in Croatia. Moreover, due to its unusual cylindrical appearance and robust monumentality, it belongs to the most significant European pre-Romanesque churches. The church is a protected cultural heritage listed in the Register of the Republic of Croatia on UNESCO's list. Today as result of numerous factors, the church is need of urgent rehabilitation. After analyses of 3D scanning it was determined the biggest issue are the walls of the church and the construction itself along with roof. During the period 1927-1930, the stability of foundation was compromised and reinforced



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concrete support construction was implemented under the roof from the south side, connecting the outer and inner rings of the church. The moisture penetrating into the medieval monument, in combination with the sea dust, very seriously endangers the reinforced-concrete structure, which holds the church of St. Donat.

Last year a repair project was initiated and Cortec's MCI® 2020 inhibitor was specified as coating to protect support structure against corrosion. MCI® 2020 is a surface applied corrosion inhibitor designed to migrate through even the densest concrete structures and seek out the steel reinforcement bars in concrete. Even when not in

direct contact with metal, the product will migrate through concrete to provide full protection. This environmentally safe inhibitor stops further corrosion of reinforcing metals, significantly extending the service life of the structure.

The famous Zagreb Cathedral is the tallest and one of the



*Saint Donatus church (left) and Zagreb Cathedral (right) are among o most valuable European historic monuments. Architects and engineers recognized Cortec's world renowned MCI® technology for restoration of these delicate, vulnerable structures.*

**We think  
instead of focusing on  
the competition  
focus on the customer**



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Grey colour powder. An ideal substitute of Zinc Dust. 100% Ecological. **Does not contain chrome and lead.** Better Anti corrosion properties. Replacement of Zinc Dust up to 60% at almost half of its price.

- **Aluminium Tripolyphosphate**

An ideal substitute of Zinc Phosphate. **Does not contain chrome and lead**, offers three to four times high anti corrosion properties compare to **Zinc Phosphate**. Replacement of  $TiO_2$  up to 17%-20% because of excellent hiding power. Can be applied to high heat stable projects up to 800°C-1000°C.

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We offer best quality of International standard Glass Flakes for Glass Flakes coating/Anti Corrosion Coating/Industrial Coatings etc. Please contact us for your desired particle size requirement. We can offer from powder form to large particle size suitable to your end applications.



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Office: 203, Abhijot Square, Behind Divya Bhaskar Press  
Corporate Road, off S.G. Highway, Ahmedabad-380 015  
Gujarat, INDIA • Phone: +9179 4006 6263  
Email: marketing@veerchemicals.com • www.veerchemicals.com



Hardik Pandya +91 96620 33217 • Vishal Shah +91 98982 96757



Left picture: Damaged steel bands. Right picture: CorrVerter® applied to the right side of the band; the coating has converted the corrosion into a protective layer.

most valuable buildings in Croatia attracting tourists from the whole world. As the most impressive gothic-style sacral building southeast of the Alps, it is characterized by great architectural and historical value. Its construction dates back to 1093 and enriching of the cathedral continued by famous architects during the following centuries.

Since low-quality stone was used in the past due to economic reasons, it soon started to deteriorate, affected by weather and city pollution. Committee for Reconstruction of the Cathedral was founded and selected Cortec® for reconstruction of its famous towers due to the recommendation of the Faculty of Mechanical Engineering and Naval Architecture in Zagreb.

During reconstruction work on the south tower, damaged steel bands were detected surrounding the tower approximately every 3m in height. They were covered with rust and in drainage areas. Visual damage to the diameter of the bands was present.

Economical approach with a minimum of intrusion to the structure was required to fix the condition of the bands. The mechanical resistance and structural stability of the

tower needed to be maintained or improved. Faculty of Mechanical Engineering examined the bands and performed experiments on the steel bars. They recommended removal of loose corrosion from the bands surfaces, enhancing the bands in the areas of damage and application of Cortec's anticorrosion protection product- CorrVerter®.

This water-based primer that quickly converts rust into a protective layer and is capable of penetrating into the depths of corroded surfaces. It contains a novel chemical chelating agent that modifies surface rust into a hydrophobic passive layer. Two-layers of CorrVerter® coating were brushed onto smaller surfaces and sprayed in larger areas directly onto the metal bands. The bands were then reinforced with steel fishplates that were welded on the bands and also protected with CorrVerter®.

With the help of a skilled team and good project management the entire project was completed successfully with minimal cost or intrusion as specified. CorrVerter® coating penetrated to the non-corroded part of the metal and stopped further advancement of the corrosion process.