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"AWARD OF EXCELLENCE 2009"

A slipformed reinforced concrete silo for grain and foodstuffs was built in 1980 and rehabilitated in 1999 in the Azores Islands. Due to design and construction deficiencies, the structure showed significant degradation. Faced with the low durability of the piecemeal repairs carried out to cope with concrete spalling due to corrosion, the owner decided to adopt a thorough approach, which began with an accurate diagnosis, to support a suitable strategy for the full rehabilitation of the structure.



A detailed inspection involving nondestructive testing was conducted. The concrete was found to have high chloride content due to the exposure to marine environment. Several possible intervention strategies were made available to the owner (which included demolishing the existing silo and constructing a new one). The selected rehabilitation strategy involved the repair of anodic zones using sprayed concrete, application of migrating corrosion inhibitors, and total external protection through a coating against carbonation and chloride penetration. A quality plan was implemented during the repair work, including control of supplies and repair processes, and inspection and testing during the work and on the final product. A monitoring system was designed and installed to assess the post-repair behavior of the silo, consisting of a number of sensors embedded in the silo walls. According to data obtained up to the present, the rehabilitated silo is performing fairly well. This case study shows the importance of close cooperation between owner, designer, and contractor, and following the proper methodology when dealing with structural rehabilitation projects.



ICRI is an institute headquartered in the United States, which rallies companies and professionals working in concrete rehabilitation with the objective of promoting quality in this area of activity through training and communication between members and end users.



Repair,
Consolidation
and Modification
of Structures

Holder of Building Permit No. 1900

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