



Electrochemical Repair Methods for Deteriorated Concrete Structures

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Fig.1 A concrete structure damaged by chloride attack

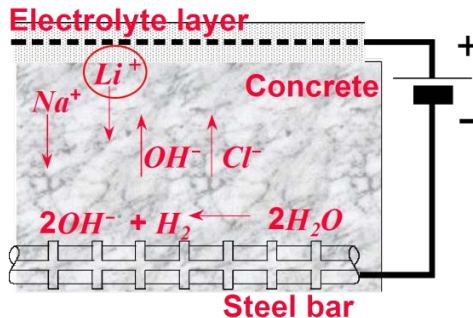


Fig.2 Principle of electrochemical repair methods

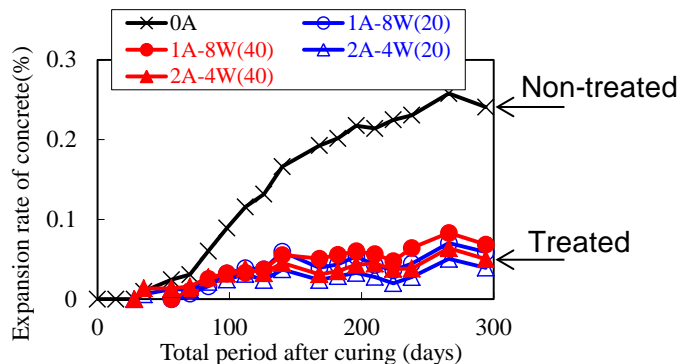


Fig.3 Suppression of concrete expansion due to applying electric current

Content:

Reinforced concrete structures have been regarded as so excellent type of infrastructure because of their high durability guaranteed by the adequate design and construction. However, these days, a part of such structures have showed premature deterioration due to severe attack of environmental factors. Fig.1 shows an example of structures heavily damaged by the chloride attack supplied by sea water.

As the effective an repair method against steel corrosion in concrete as shown in the case of chloride attack, the electrochemical repair method has been focused. The principle of this method is shown in Fig.2. Electrochemical migration of ions in concrete or penetration of alkali solution into concrete results in improvement of the durability of structures.

Recently, our research team has tried electrochemical penetration of lithium ions which can suppress concrete expansion and cracking due to ASR. Fig.3 shows successful suppression effect achieved by the proposed electrochemical method.

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