

Times Journal
of Construction
and Design
March 2008

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SOAK IT DRY

Dinesh Gupta highlights the various moisture related problems in concrete coatings

In this article, I would like to share with you the experiences on major application areas where usage of dehumidification is both extensive and essential. Concrete coatings, today, is becoming very popular and is being applied at an increasing rate in various applications to prevent corrosion. Concrete itself is considered a corrosion resistant material and is often applied over steel. However, due to its reactive characteristics, it requires protection from many common conditions found in the industrial and marine areas, throughout the world. Thus, coatings are needed to provide this protection. However, applying coating to concrete is more complex and difficult than other surfaces. There are some physical and chemical properties of concrete that have a direct bearing on coatings. Some of them include excess moisture, cracking, alkalinity, freezing and thawing, porosity and soluble salts, corrosion of steel in concrete and reactive aggregates.

Effect of excess moisture on cement coatings

Concrete gains its strength due to the presence of the water molecules inside. To achieve proper

strength and bonding the concrete has to be hydrated to around 70 per cent before drying process is started. It takes around 28 days for concrete to hydrate to this level. However, it would take around six months for the concrete (6" thick) to dry before coating can be applied. This can lead to eventual delay in projects. In addition, moisture has severe effect in the performance and life of the coating. It inhibits initial cure and coating adhesion. When moisture travels to the surface and tries to escape after coating has been applied, it causes fish eye or bubbling on the coating. Excess moisture in concrete has caused many coating failures, disrupting building operations necessitating expensive repairs. Hence, it is important to remove this excess moisture from concrete within a reasonable period.

The solution

There are various techniques available to remove the excess moisture from concrete; these include ventilation, heating and dehumidification. Ventilation and heating are often used in conjunction with the most effective and quickest methods of moisture removal, that is, dehumidification. Dehumidification involves lowering the dew point of the air surrounding the concrete so that the water starts to migrate from concrete to the dry air surrounding it. However, depending on the amount of moisture in concrete, location and concrete type, a judicious mix of the three can be used for quick drying.

Bry-Air Desiccant Dehumidifier is the most economical and reliable method of concrete drying as it removes moisture from the air, through a process of continuous physical adsorption, and can effectively maintain the humidity conditions required as it is capable of maintaining room humidity (RH) as low as one per cent or even lower at a constant level, regardless of ambient conditions.

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Desiccant Dehumidifier – FLI Series



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