

Using Scanning Electron Microscope and Computed Tomography for Concrete Diagnostics of Airfield Pavements

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Abstract : This article presents the comparison of selected evaluation methods regarding microstructure modification of hardened cement concrete intended for airfield pavements. Basic test results were presented for two pavement quality concrete lots. Analysis included standard concrete used for airfield pavements and modern material solutions based on concrete composite modification. In case of basic grain size distribution of concrete cement CEM I 42,5HSR NA, fine aggregate and coarse aggregate fractions in the form of granite chippings, water and admixtures were considered. In case of grain size distribution of modified concrete, the use of modern modifier as substitute of fine aggregate was suggested. Modification influence on internal concrete structure parameters using scanning electron microscope was defined. Obtained images were compared to the results obtained using computed tomography. Opportunity to use this type of equipment for internal concrete structure diagnostics and an attempt of its parameters evaluation was presented. Obtained test results enabled to reach a conclusion that both methods can be applied for pavement quality concrete diagnostics, with particular purpose of airfield pavements.

Keywords : scanning electron microscope, computed tomography, cement concrete, airfield pavements

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