

NONDESTRUCTIVE EVALUATION OF FRP MATERIALS AT ELEVATED TEMPERATURE

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Project Description:

The research involves an ongoing project at Tulane University that is concerned with the nondestructive evaluation of fiber reinforced polymer components. These materials have a very high strength-to-weight ratio and are resistant to fatigue and most chemical environments. In addition, they will not corrode in the presence of moisture.

Acoustic emission monitoring is one way in which structures can be monitored to determine their long-term suitability in the constructed environment. When damage takes place within a structure, stress waves are generated that can be detected on the surface of a structure with a piezo-electric crystal. The interpretation of these captured waves is then used to determine the level damage that has occurred internally to the structure.

Project Objectives:

The use of acoustic emission has been proposed for a number of civil engineering and aerospace applications. In many cases, the structural system to be evaluated is subjected to elevated temperatures. In some cases, these temperatures can be extreme. The objective of this research investigation is to determine the effect of elevated temperature on the received acoustic emission data and the interpretation of that data. Specimens to be tested are 1/4" thick by 1.5" wide by 30" long fiber reinforced polymer specimens.

Prerequisites or experience required

No prerequisites or experience is required. An interest in structural or materials engineering will be helpful.