

# MU Engineers Designing Sensor System to Prevent Dam Failure

November 15 2007

---

As engineers all across America struggle to maintain the nation's aging infrastructure, a University of Missouri-Columbia researcher is developing a way to prevent one type of disastrous dam failure.

Vellore Gopalaratnam, professor of civil and environmental engineering in MU's College of Engineering, is developing a sensor system that will remotely measure how much strain is being placed on a type of spillway gate called a Tainter gate. Indirectly, the sensors will measure the condition of the gate's hinge – a known problem area that is not only difficult to reach but hidden within the gate's construction, Gopalaratnam said.

Gopalaratnam received \$48,108 from the U.S. Army Corps of Engineers to develop and test the Tainter gate monitoring system. The monitoring project targets the curved metal gate's hinges – its trunnion bearings, specifically – which are susceptible to corrosion, but cannot be easily removed for inspection, he said.

“Some of these gate systems are now 40 or 50 years old,” Gopalaratnam said. “We need to investigate whether these gates and gate hinges are operating properly or are a cause for concern before they create problems.”

Indeed, a Tainter gate on Folsom Dam in California broke suddenly in 1995, releasing a torrent of water into the Lower American River. While no one was injured by the flood, the accident prompted federal engineers

to review Tainter gate design, according to Guillermo Riveros, a civil engineer in charge of the project for the Corps' Engineer Research and Development Center based in Vicksburg, Miss.

Riveros said Tainter gates typically are included in navigational and flood control dams, which by their nature must withstand sudden, heavy stress. Ten Missouri dams maintained by the Army Corps have Tainter gates, officials said.

Gopalaratnam plans to test the Tainter gate monitoring system next spring at the Carlyle Lake Dam in Illinois. Once proven, the Army Corps plans to use the Tainter gate monitoring system as a portable measurement system at similar dams throughout the country, Riveros said.

Source: University of Missouri

Citation: MU Engineers Designing Sensor System to Prevent Dam Failure (2007, November 15) retrieved 29 April 2024 from <https://phys.org/news/2007-11-mu-sensor-failure.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.