

## Optimizing Building Performance Parameters: The East African Context

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My current research portfolio includes projects focusing on optimizing building performance parameters using selected examples from the East African context. The major initiatives supported by various National Science Foundation (NSF) grants include a workshop held in on May 20-21, 2009, in Dar es Salaam, Tanzania, on advancing the structural use of earth-based brick, ongoing investigations of adaptations that can be made to existing earth bricks to improve their hygrothermal performance in hot and humid climates, and a continuing program for graduate and undergraduate students to carry out research in construction engineering technologies.

The workshop in Dar es Salaam provided both a national and international forum for researchers in earth-based technologies and experts from closely aligned disciplines to discuss the fundamental structural and durability performance parameters of earth-based bricks. The workshop was held in collaboration with Tanzania's National Housing Building Research Association, AQE Associates, the National Environmental Management Council and Ardhi University in Dar es Salaam.

The NSF Small Grants for Exploratory Research (SGER) program provided funding for a two-week field trip to Tanzania in February 2009, for development of a project on optimizing the hygrothermal performance of earth bricks in hot and humid climates.

Finally, the NSF: IRES project on global perspectives on engineering sustainable building systems once again provided opportunities for student research in construction engineering technologies in partnership with professors from the University of Nairobi at selected sites in Kenya and Tanzania. There were six student participants in 2008 and four in 2009. The themes that have been investigated so far include ecological building materials and water purification strategies.

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