



School of Graduate Studies and Research

Invites faculty, staff, and students to attend

Faculty Research Colloquium

Presented by



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Department of Civil & Infrastructure Engineering
School of Engineering

“Development of Guyed and Wind Turbine Towers Using Advanced Composite Materials”

Wednesday, October 22, 2014, at 3:30 PM
Conference Room - Building D

Abstract

This presentation will introduce new developed technology needed for the design, analysis and fabrication of new generation of composite guyed towers, wind turbine towers, composite housing and composite bridges made from GFRP materials. The presentation will emphasize more on the developing an 81m guyed tower completely made from GFRP materials. Various models to analyze an 81 m tower using the finite element program ANSYS were conducted in accordance with the Canadian Standard CSA-S037. Several parameters were investigated theoretically, including: the effect of three different laminates that contained a variety of stacking sequence of laminate orientations; various thicknesses for each laminate; the effects of fiber volume fractions; and, various sizes and location of guy cables. An 8.6 m tower segment was tested under static and dynamic load to verify the theoretical model. In addition, a comparative analysis was carried out between an 81 m composite tower and a steel tower both designed to resist identical loading conditions. The test results confirmed the validity of the theoretical model.

About the Speaker

Dr. Sami received his Bachelor of Civil Engineering in 1998, his M.Sc. from Dalhousie University in 2005, his Masters certificate in Project Management from York University in 2011; and his Ph.D. in Structural Engineering from the University of Manitoba in 2012. Dr. Alshurafa is a registered licensed professional engineer in Canada. Dr. Alshurafa published many journal papers related to bridge rehabilitations and composite guyed towers. His research interests include areas related to the development of new technology using advanced composite materials to build new generation of composite guyed towers, wind turbine towers and composite bridges. Other research topics include rehabilitations of reinforced concrete, steel, masonry and wood structures.