

# Mechanical Engineering Department Seminar

3:35pm December 4, 2013  
1130 Mechanical Engineering

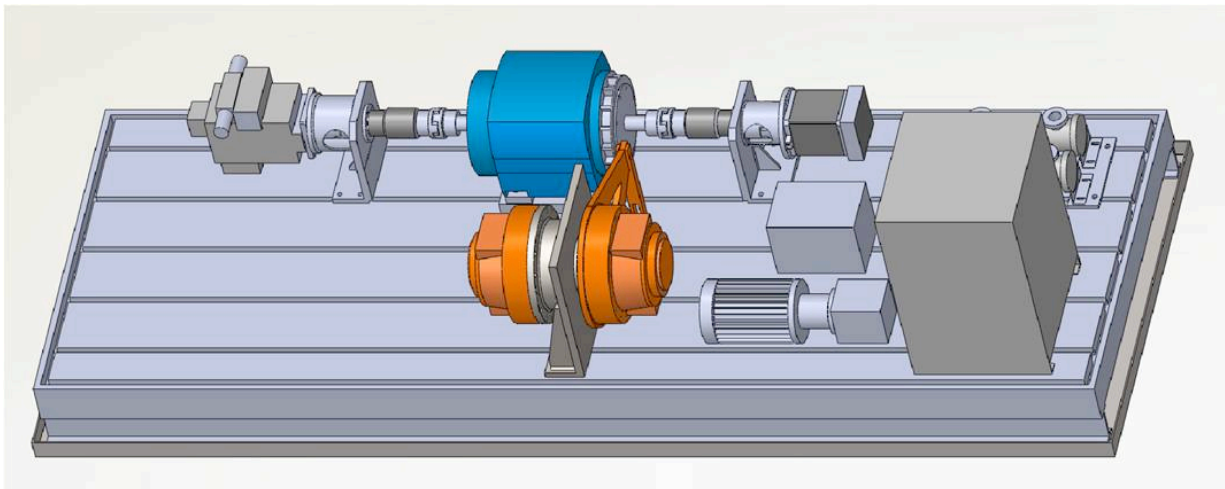


## Hydrostatic Transmissions for Wind Turbines

Kim A. Stelson

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Wind turbines require a transmission to match the slow turbine speed to the much faster generator speed. In this talk, a variable-ratio hydrostatic transmission will be considered as an alternative to the conventional fixed-ratio mechanical gearbox. A hydrostatic transmission has many other advantages including reduced cost and weight and increased life and reliability. The talk will begin with overviews of fluid power and wind power followed by a description of the state of development of hydrostatic drives for wind power. We will highlight recent research at the University of Minnesota on the use of hydrostatic transmissions for mid-wind (100 kW to 1 MW) applications.



**Bio:** Kim A. Stelson is Director of the NSF-funded Engineering Research Center for Compact and Efficient Fluid Power. He is a Professor in the Department of Mechanical Engineering at the University of Minnesota where he has been since 1981. He received his B.S. degree in mechanical engineering from Stanford University in 1974 and his S.M. and Sc.D. degrees in mechanical engineering from M.I.T. in 1977 and 1982. Stelson's fluid power research includes work on hydraulic hybrid vehicles and hydrostatic transmissions for wind power. Before becoming involved in fluid power research, Stelson was active in research in the modeling and control of manufacturing processes, especially metal forming, polymer processing and composite materials manufacturing. He has been a visiting faculty member at Hong Kong University of Science and Technology, the University of Auckland and the University of Bath. He has previously been Director of the Design and Manufacturing Division and Director of Graduate Studies for the M.S. in Manufacturing Systems Program at the University of Minnesota. Stelson has been an Associate Technical Editor of the Journal of Dynamic Systems, Measurement and Control, a journal that has twice awarded him the Rudolf Kalman Best Paper Award. He is a Fellow of the American Association for the Advancement of Science.