INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
AGRICULTURAL RESEARCH DIVISION

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MS Student – Irrigation Energy Conservation

Professors William Kranz and Derrel Martin are seeking a self-starting individual to work toward a MS degree in Agricultural and Biological Systems Engineering or Mechanized Systems Management. The goal of the project is to develop an Energy Star rating system for irrigation pumping installations.

Irrigation pumping plants consist of a power unit, a water pump and ancillary components needed to move water from surface or ground water into and through irrigation distribution systems. Current estimates suggest that pumping costs in Nebraska are over $350 million per year. The University of Nebraska faculty originally conducted research to establish the Nebraska Pumping Plant Performance Criteria in 1959. The Nebraska Criteria has been updated over time and has become an internationally accepted means of comparing pumping plant installations powered by different energy sources. An Energy Star rating system would use updated performance criteria to establish a benchmark that would help consumers assess how efficient their pumping plants use energy. Based on the operating characteristics of various pumping plant components, the rating system would indicate how much energy the pumping plant should use if it were at peak performance, average performance and a number of ratings in between. This thesis project will assemble and verify energy efficiency information for each component of a pumping plant and develop a procedure for declaring the level of fuel consumed per acre-inch pumped that is necessary to be included in various levels of the Energy Star system.

Qualifications

Applicants must have completed a B.S. degree from an engineering or mechanized systems management program with a grade point average greater than 3.0 on a 4.0 scale. Compensation will include an annual stipend, tuition remission, and health insurance. Interested students should apply to the Office of Graduate Studies at the University of Nebraska using the online registration form accessible at: http://bse.unl.edu/Grad/index.shtml

Questions

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