Final Technical Report

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Executive Summary

From September 1, 2002, to November 30, 2006, the Industrial Assessment Center (IAC) at the University of Illinois at Chicago (UIC) conducted over 120 industrial assessments across 19 different industry types in five different states. In the 1,000+ assessment recommendations written during the award, the UIC-IAC has written recommendations that, if implemented will save several millions of kilowatt-hours of electricity and several million British thermal units of natural gas annually. Additionally, the UIC-IAC has achieved an overall implementation rate in excess of 50%.

During the overall span of the award period, the UIC-IAC has trained over 50 students, nearly 25% of which have remained in the energy field in some way after graduating from the IAC

program. UIC-IAC students have received over $23,000 in scholarships in the last two years alone.

During the course of the award, the UIC-IAC has made it a priority to incorporate ITP tools and technologies whenever possible. The ITP Best Practices tools have been used on several assessments and introduced to clients. DOE technologies are constantly compared against assessment clients to determine what technologies have reached the stage where they can effectively be introduced into industrial operations.

The UIC-IAC has been involved in several projects for the Department of Energy (DOE), including energy assessments of Department of Defense bases and industrial facilities, the Plant Energy Profiler (PEP) tool assessment, and expanding the range of assessments to include large-energy users. Additionally, the UIC-IAC has forged a close relationship with the Midwest CHP Application Center, working to incorporate combined heat and power (CHP) and distributed generation (DG) technologies into industrial plants. The most recent project is the Save Energy Now (SEN) six- and 12-month follow-up surveys being conducted by UIC-IAC students. The SEN surveys are an effort for the DOE to determine the implementation rate of energy efficiency measures identified by Qualified System (QS) specialists throughout the nation.

The UIC-IAC has also written several papers highlighting its work in the arena of energy efficiency. Currently, several UIC-IAC students have submitted a paper to the American Council for an Energy-Efficient Economy (ACEEE). This paper has been accepted by ACEEE and will be presented later in 2007.

Task Summary

Summarize the IAC's activities by task for the entire period of funding.

Task 1: Conduct Industrial Assessments, to include a variety of plant types and sizes as well as coverage of the geographic area defined in the Annual Workplan Industrial Assessments:

From September 1, 2002, to November 30, 2006, the UIC-IAC has conducted over 120 industrial assessments. During this period of time, 19 different industry types were assessed in five different states. In the 1,000+ assessment recommendations written during the award, the UIC-IAC has written recommendations that, if implemented would save several millions of kilowatt-hours of electricity and several million British thermal units of natural gas annually. Additionally, the UIC-IAC has achieved an overall implementation rate of all the actions it has recommended during this time in excess of 50%.

Task 2: Promote and increase the adoption of assessment recommendations and employ innovative methods to assist in accomplishing these goals.

In an effort to increase the implementation of assessment recommendations, the UIC-IAC evaluates the implementation surveys that it receives from its clients. When feedback from a plant that has been visited is received, the results are shared with the IAC team. This is done to inform students of their recommendations being implemented and to understand and learn from recommendations that have not been implemented. The goal of reviewing the implementation of IAC reports is to build on positive ideas that are already being implemented and to improve and refine recommendations that have not been implemented.

Task 3: Promote the IAC Program and enhance recruitment efforts for new clients and expand geographic coverage.

During the course of the award, the UIC-IAC has assessed industrial facilities in underserved parts of Illinois, Indiana, Michigan, and Wisconsin. During this time, over 10% of the total number assessments were conducted outside the state of Illinois.

Task 4: Provide educational opportunities, training, and other related activities for IAC students.

During the course of the award, the UIC-IAC has stressed the importance of the training of its students. The training program of the UIC-IAC incorporates senior and the Lead Students as trainers for new students. Training on basic systems is handled by senior students in the program. Usually these students have one year of experience with the program. More advanced systems, such as boilers and compressed air systems is done by the Lead Students. For new students entering the IAC program it takes approximately one semester to complete the full training program. During the overall span of the IAC award at UIC, the UIC-IAC has trained over 50 students, nearly 25% of which have remained in the energy field in some way after graduating from the IAC program.

In addition to educational opportunities provided during assessments and training held by IAC students, the UIC-IAC has had outside professionals give presentations on various topics. The most recent example of this is an expert in compressed air giving a presentation to the UIC-IAC team on the subject of compressed air controls with respect to variable frequency drives.

Task 5: Coordinate and integrate Center activities with other Center and IAC Program activities, DOE's Industrial Technologies programs and other EERE programs.

During the course of the award, the UIC-IAC has made it a priority to incorporate ITP technologies whenever possible. This is done by frequently updating the IAC team about new and emerging ITP technologies. Recently, the best source of information regarding new technologies has been the ITP website.

In addition to incorporating ITP technologies into IAC reports, the UIC-IAC also collaborates with other centers. This collaboration is done mainly through the IAC Database. The IAC Database is routinely used as a reference when looking for new ideas in a specific industry.

Task 6: Other tasks or special projects, as needed, and as determined by DOE to be advantageous to the program and in furtherance of IAC Program goals.

During the course of the award, the UIC-IAC has been involved in several projects for the Department of Energy (DOE). The most recent project is the Save Energy Now (SEN) surveys being conducted by UIC-IAC students. The SEN surveys are being conducted in support of DOE's effort to determine the implementation rates, associated savings and possible energy-saving spin-off actions that have come about due to the assessments being conducted by Qualified System (QS) specialists throughout the continental United State.

The UIC-IAC has also written several papers highlighting its work that have been submitted and accepted by organizations such as the Association of Energy Engineers (AEE), the American Society of Heating, Ventilating and Air-Conditioning Engineers (ASHRAE), and the Industrial Energy Technology Conference (IETC). Currently, several UIC-IAC students have submitted a paper to the American Council for an Energy-Efficient Economy (ACEEE). This paper is a case study of an assessment conducted by the UIC-IAC where the Steam System Assessment Tool (SSAT) was used to quantify boiler system savings.