

Case Study: Hines Estimates Energy-Cost Savings of 670,000 RMB at Embassy House from Low- and Moderate-Cost Measures

Project Summary

Hines estimates annual energy-cost savings of 670,000 RMB at Embassy House, a three year old, 56,000 square meter residential apartment building that it owns and manages in Beijing, China. Hines attributes these savings to low- and moderate-cost measures that were implemented by the Embassy House engineering staff throughout 2004.

Actions Taken

After construction was completed on Embassy House in 2002, the primary focus of the engineering staff was to make initial equipment adjustments and establish operating procedures. However, the engineering staff could not make significant changes to the building systems due to various post-construction warranties and guarantees.

In 2004, the engineering staff became concerned about energy consumption and costs and took two actions which led to the implementation of low- and moderate-cost energy-saving measures. First, the engineering staff began posting daily electricity and natural gas consumption data on the engineer's notice board. Second, the Engineering Department held a competition in which employees were asked to submit creative ideas for saving energy.

As a result of the engineering staff's increased awareness of energy consumption and their willingness to provide creative solutions, they identified and implemented the following measures:

- ◆ **Scheduled Lighting Operation at the Car Park, Gym, Pool, and Business Center:** The engineering staff received training to switch the lights on and off according to a set schedule called the "Utility Rounds Check Sheet." Responsibility for each area of the building was assigned to specific staff. The building automation system (BAS) was updated to control the car park lighting, switching half of the lights off during the night. The cost to implement these changes was 5,600 RMB. The time to implement was one month. The cost savings is expected to be 253,339 RMB per year.



◆ **Replaced the Electrical Steam Humidifier with an Evaporative Humidifier:**

An electrical steam humidifier (220kW) was installed during building construction. The cost to operate was approximately 420,000 RMB annually. An evaporative humidifier was installed to replace the original one. The cost to purchase and install the new humidifier was 116,000 RMB. The time to purchase and install was three weeks. The annual cost of operation is approximately 2,207 RMB. The cost savings is expected to be 417,793 RMB per year.

Results

The total annual cost savings from these measures is estimated to be 670,000 RMB. The payback is less than one year. Hines monitors and verifies these results using Hines HUMMT[®], a tool which tracks facility energy consumption and compares it to other Hines properties (locally and internationally). As part of its routine building management, Hines continues to post energy data and to solicit energy-saving ideas from engineering staff and expects to identify and implement additional measures in the future.

According to Huang ShuYu, Engineering Manager at Embassy House, the lesson learned from these achievements is that, “Small adjustments can have a large impact on the entire building’s energy cost. The training of staff is very important so that there is ownership and enthusiasm in carrying out the small modifications.”

In addition to energy-saving measures, as part of this effort, the engineering staff also identified and implemented a water-saving measure that is expected to save an additional 33,600 RMB each year. The engineering staff modified the rooftop plumbing to collect the cooling tower blow-down water into the gray water collection tank (gray water is the treated waste water from all fixtures except toilets). Previously, the cooling tower blow-down water (water contains too much dissolved impurity needs to be blown down out of the cooling tower) went directly to the drain. The engineering team connected the cooling tower blow-down pipe to the gray water collection tank so that the blow-down water could be treated and supplied back to the building for such uses as watering the lawn and flushing the toilets. The cost to implement this change was 6,180 RMB. The time to implement was seven days.

Contact Information

For more information on the eeBuildings program, to find out about upcoming trainings and events, or for general information on how to reduce building energy consumption using simple, low-cost operational measures, go to www.epa.gov/eeBuildings or write to eeBuildings@epa.gov.

* The U.S. Environmental Protection Agency’s eeBuildings (energy-efficient Buildings) www.epa.gov/eeBuildings program helps building owners, managers, and tenants improve the energy performance of their buildings. Drawing on the expertise of ENERGY STAR, eeBuildings connects financial and environmental performance to energy efficiency.