

The Integrated Management of Energy Conservation Beijing Huilongguan Hospital

GGHH Agenda Goals

- Energy
- Water

Hospital Goals

- Reduce energy consumption and develop green and healthy hospital
- Establish the hospital to be energy-saving model of public institutes

Progress Achieved

- The hospital was awarded Beijing Outstanding Water-Saving Institute and Outstanding Energy Saving Institute of Changping District. The hospital still meets their energy-saving and consumption-reduction targets even though the space for medical use and the need for healthcare staffs is continuously increasing,
- Output energy consumption in 2014 decreased by 25%, and dropped by 34.78% in the 3 years from 2012 to 2014. The total energy consumption in 2014 increased by -13.84%.
- The energy consumption of per building area in 2014 was 0.051 ton/m², reduced by 13.56%.
- A number of energy conservation projects were completed and achieved good effect of energy saving.

The Issue

Beijing Huilongguan Hospital pays great attention to energy and resource conservation. It scaled up efforts at several aspects during China's 12th Five-year Plan period, including energy-saving planning and management, energy-saving technology renovation, developing demonstration projects, using energy-saving products, conducting energy-saving advocacy and education. The hospital became one of the first Capital Volunteer Cleaner Production Auditing institutes in 2012. The energy auditing of the hospital has been successfully completed in 2013. In 2014, HuiLongGuan Hospital joined the Global Green Healthy Hospitals as the first large psychiatric medical institute in the nation that joining in the network. In 2015, the hospital is developing to be an Energy-saving Model for Public Institutes.



Sustainability Strategy Implemented

1. Optimizing the management system, keeping the work of energy conservation in good order.
2. Conducting publicity and training, enhancing hospital leaders and staffs' awareness of energy conservation.
3. Highlighting energy saving technologies, promoting economic performance steadily.

Implementation Process

Detailed implementation program:

1. Optimizing the management system, keeping the work of energy conservation in good order.
 - 1.1 Setting feasible goals

The hospital developed plan for energy conservation and building green and healthy hospital based on practical situation, set energy saving goal for each year and decomposed the tasks.
 - 1.2 Strengthening the instrument responsibilities

An energy-saving leading group was organized and adjusted according to needs. The group was led by a major hospital leader and department leaders took charge of specific work in different area.
 - 1.3 Completing rules and regulations

The hospital has established a supervision system for energy saving measures, such as arranging specific staff to conduct statistical analysis of energy consumption and publicize the data regularly, and applying rewards or penalties according to the assessment of energy consumption. According to the performance assessment, departments which took more than 1% of the hospital's total energy consumption, such as the boiler room, the dining hall and the electrician room, were required to set energy-saving goals and specify the responsibilities.
2. Conducting publicity and training, enhancing hospital leaders and staffs' awareness of energy conservation.
 - 2.1 Using modern media publicity, such as pictures, advertising lights, banners, TV and so on.
 - 2.2 Carrying out environmental protection programs

During the national propaganda month and propaganda week on energy saving, major leaders of the hospital personally led the environment protection activities, promoting green activities, such as reducing the use of elevators. Green transportation has become the common view of the hospital staff.
 - 2.3 Incorporating the environmental publicity into work

Proposals for saving food, intolerance of waste and civilized dining were posted in dining hall. Water saving signs were pasted on the walls next to water consuming points. In addition, different environmental tips were provided to the staffs, including setting a proper air conditioning temperature, triggering automatic shutdown when no one using computers for more than half an hour and turning off lights for empty rooms.
3. Highlighting energy saving technologies, promoting economic performance steadily.
 - 3.1 Replacing lights with energy-saving lights.
 - 3.2 Using ground-source heat pump system (GSHPS).

This initiative not only saves electricity, but also improves efficiency of heating and cooling system, which benefits more than 800 patients and staffs in the building.
 - 3.3 Reforming tap water pipeline network to avoid water leaking.

After the reform, daily water consumption was reduced by 20%, which decreased from 1,100 tons to 880 tons per day.
 - 3.4 Replacing old transformers and building new distribution room.

The new type transformers can reduce no-load loss by about 10% and reduce load loss by 22%.



- 3.5 Reconstructing boilers from coal-burning to gas-burning for pollution reduction.
 Four boilers have been replaced by two 8-ton gas boilers and two 4-ton gas boilers. The measure reduces 4,700 tons demand for coal each year.
- 3.6 Other measures to conserve resource
 Four old elevators with high cost and low efficiency engines in Building 2 and Building 3 were replaced with high efficiency ones.
 Some old split-type air conditionings were replaced.
 Shuttle bus routes were refined.
- In addition, the hospital improved the hospital's landscaping. The green gardens provides better environment for patients and staffs, and in the meanwhile indirectly reduce the hospital's energy consumption by reducing heat-island effect and the usage of air conditionings.

Tracking Progress

Table 1 Total Energy Consumption reduction of 2012-2014

Items	2012	2013	2014	The rate of energy consumption increase in 2014 (%)	The rate of output energy consumption decrease in 2014 (%)	The rate of output energy consumption decrease for the three years (%)
Total industrial output value (10,000 RMB)	40,548.6	44,549.3	51,035	--	--	--
Total energy consumption(TCE)	2,777.75	2,681.92	2,310.66	-13.84	--	--
Output Energy consumption (TCE/10,000RMB)	0.069	0.06	0.045	--	25.00	34.78

Table 2 Reduction of energy consumption of per building area in 2010-2014

Items	2010	2011	2012	2013	2014
Total energy consumption(TCE)	2,962.64	2,881.34	2,777.75	2,681.92	2,310.66
Building area (m²)	45,656	45,656	45,656	45,656	45,656
Energy consumption of per building area (TCE/m²)	0.065	0.063	0.061	0.059	0.051

The rate of energy consumption reduction of per building area (%)	3.08	3.08	3.08	3.28	13.56
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Table 3 Parts of the energy conservation projects

Projects	Estimated annual energy saving		Amount of annually saved expenditure USD \$1,632.65 (10,000 RMB)
	Physical quantity/year	tce/year	
Reconstructing boilers from coal-burning to gas-burning	4,700 tons of coal	2240	2.86
Replacing old lights	70,000 kwh	86.03	5.60
Reforming tap water pipeline network	53,426 tons of water	--	30.83
Using ground-source heat pump system (GSHPS)	29,700 kwh	36.5	2.67
Reforming electric water heater	55,000 kwh	67.60	3.50
Replacing old split-type air conditionings	320,000 kwh	393.38	22.40
Replacing old transformers	16,800 kwh	20.65	1.18
Refining shuttle bus routes	12 tons of gasoline	20.74	9.30
Total	--	--	78.34

Demographic information

Beijing Huilongguan Hospital is a Third-level First-class (high) psychiatric hospital, affiliated to Beijing Municipal Health Bureau. The hospital covers 147,543 square meters in total. It has about 46,000m² of floor space, and bed capacity of 1,369, with staff over 1,200. The utilization of beds of Huilongguan Hospital is about 108%. It is currently a leading psychiatric hospital in clinical care, medical teaching and research in China.

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