China
(Materials Energy Conservation Center, China)

Ⅰ.The Energy Auditing Case of a Thermal Power Plant

(A) Enterprise Profile

The thermal power plant has two production workshops with three mesotherm medium-pressure 65t/h coal-fired boilers, two 12kW extraction condensing turbine generation units, one 6kW extraction condensing turbine generation unit, one 3kW extraction condensing turbine generation unit and a total installed capacity of 33kW. The rated steam supply capacity is 185t/hour.

(B) Energy Consumption Structure

Name of energy	Quantity in kind	equivalent value (tce)	ratio (%)	equivalence (tce)
coal (t)	161775	137254	99.85	137254
Diesel oil (t)	137.57	200.45	0.15	
water (m^3)	1856523	—	—	477.31
Total	—	137454.45	100	—
Power supply , 10^4kWh	14427.6	17731.52	—	—
Heat supply , GJ	1416333	48325.28	—	—
Comprehensive energy consumption , tce	—	71397.65	—	—

(C) Auditing Conclusions and Recommendations

①Since the high content of combustible matter in the dreg and flying ash in boiler No. 6, the loss arising from incomplete combustion for the solid of the boiler is high. We suggest them to intensify combustion adjustment, management and inspection over equipment.
②We suggest them to mount **heat-exchange devices for the economizer** of No.5 boiler, intensify management over coal distribution, conduct scale and dust removing regularly, further intensify operational burning adjustment to improve the combustion.
③Some steam valves are exposed to the outside. We suggest them to intensify patrol and inspection over steam pipelines, select **new type heat-keeping materials**, and apply heat-preservance materials to damaged and bare steam pipeline and valves to the minimum required thickness.
④We suggest them to reuse the heat of the cycling water of the condenser. Change the circulation of the water from in-between the cooling tower and the condenser to circulation in-between the heat users and the condenser.
⑤We also suggest them to conduct technical innovation, to use **frequency control of motor speed** to replace the varying duty operational motor.
⑥We suggest them to conduct energy conservation modification for the **lighting system** according to the requirements of green lighting to reduce power consumption.
⑦No. 2 demineralization pump in the Chemical Water Workshop is of the eliminated type equipment, part of the power meters DS8, DT10 and DT8 are all of the eliminated type, they should be replaced.
⑧We suggest them to intensify energy conservation training for energy managing personnel and operators of major energy-consumption equipment.

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Ⅱ. Energy Auditing Case for a Glassware Making Company

(A). Enterprise Profile

The company is a glass beer bottle producing enterprise. In 2006, the beer bottle production quantity reached 106671 tons. The comprehensive energy consumption totaled to 22449.02 tce, and comprehensive energy consumption per unit was 210.45 tce/t.

(B) Energy Consumption Structure

product	Actual Production (t)	Coal		Power		Coal tar		Creosote		Comprehensive energy consumption (kg_{ce}/t)
		Total quantity (t)	Unit consumption (kg/t)	Total quantity (10^4kWh)	Unit consumption (kWh/t)	Total quantity (t)	Unit consumption (kg/t)	Total quantity (t)	Unit consumption (kg/t)	
Glass-ware for daily use	106671	17188.8	161.14	1487.1	139.41	3702.9	34.71	2618.6	24.55	210.45

(C) Auditing Conclusions and Recommendations

①The allocation for energy measuring meters for electricity, steam and compressed air in the company cannot satisfy the state requirements, which, in turn caused rough examinations. The measuring of coals being fed into the furnace was counted on the basis of carts and the differences are significant. We suggest them to **allocate various measuring meters** according to the requirements in national codes.

②The coal and oil measuring is incorrect. We suggest them to allocate measuring meters according the measuring standards for coal and oil and measure the practical heat productivity and other related criteria of the coal and fuel oil entering the plant and to work out a limit for the discharge of combustion matter.

③We suggest them to adopt **frequency control of motor speed ventilator** to innovate the pulling equipment and to replace all fluorescent lamps with **energy conservation lamps**.

④We suggest the plant to install an **afterheat boiler** to replace the 4 t/h coal-fired boiler in the rear of the glass kiln to reuse the heat for smoke exhaust and to reduce the temperature.

⑤We suggest them to adopt the oxygen-rich combustion technique for the furnace. In this way, the flame radiation temperature inside the furnace will be improved, thus, reduce the discharge of smoke and fume.

⑥We suggest them to modify No. 1 oil-fired furnace into a coal-fired furnace. To improve heat preservance effect by way of **changing the furnace structure**. In this way, the efficiency will be increased greatly.

⑦We also suggest them to intensify training of energy-managing personnel and energy-consumption equipment operation personnel in energy conservation theories.