

ISO 50001 Energy Management System Case Study

2020

China

ZaozhuangChuangxinShanshui Cement Co., Ltd

dry process rotary kiln and a cement grinding production line with an annual output of 1 million tons,



Energy control center

Case Study Snapshot

Industry	Building material
Product/Service	cement
Location	China
Energy management system	ISO 50001
Energy performance improvement period, in years	2019-2020
Energy Performance Improvement (%) over improvement period	5.7%
Total energy cost savings over improvement period	7000000\$USD
Cost to implement EnMS	3000000\$USD
Total Energy Savings over improvement period	180936(GJ)
Total CO₂-e emission reduction over improvement period	247267(Metric tons)

Organization Profile & Business Case

Shandong Shanshui Cement Group Co., Ltd. (hereinafter referred to as Shanshui group) is a large-scale enterprise group which takes the production of cement and clinker as the leading industry and integrates the production and sales of commercial mixing, pipeline, plastic knitting and aggregate. It is one of the earliest enterprises engaged in the production of new dry process cement in China and one of the 12 national large-scale cement enterprises supported by the state.

ZaozhuangChuangxinShanshuiCement Co., Ltd . is a joint venture between Shanshui group and China Pioneer cement (Hong Kong) Co., Ltd. with a capital contribution of US \$30 million. The company has a clinker production line with a daily output of 5000t / D

and a 9mw pure low-temperature waste heat power generation project matched with the clinker production line. The company covers an area of 300 mu, and has a fixed asset of 560 million yuan. The production line adopts advanced new dry process preheating decomposition rotary kiln technology, with advanced technology and excellent equipment. The leading products "Shanshui Dongyue" brand p.o52.5, P.O42.5 ordinary portland cement and high-quality clinker, etc., our company paid tax of 91.1399 million yuan in 2018, 101.068 million yuan in 2019, arranged employment of 240 people, of which the secondary school and above

accounted for more than 50% of the company's population.

Shanshui group has established an energy management and control center, a three-level energy network of group headquarters, operation area and subsidiary (Branch) companies, and a three-level energy network of company, workshop and team.

No matter from the understanding of energy management, energy management methods and energy-saving technology innovation can achieve significant results, mobilize the enthusiasm of each employee, add up to a large number, and achieve the effect of energy conservation and emission reduction.

In order to further implement and implement the national energy conservation and emission reduction policy, and strengthen the main responsibility of enterprise energy management, the company has established an energy management and control center, with the general manager as the person in charge, and each workshop has set up an energy management group, with the person in charge of each workshop as the group leader. The three-level management of the company workshop group is implemented, and the tasks and responsibilities of energy posts are defined through the post responsibility system and energy consumption In the form of quota management, the energy use management system will be implemented at the grass-roots level and included in the economic responsibility system assessment. PDCA cycle is adopted in the way of thinking, and four long-term mechanisms are adopted in the way of working.

“Rely on scientific and technological innovation to reduce energy consumption ”

—Sun Lebin, general manager

Business Benefits

Through the 13th five year energy conservation plan, the company has strictly implemented and completed the total amount control target issued by the national development and Reform Commission.

By clarifying the tasks and responsibilities of energy jobs, implementing the energy use management system to the grass-roots level through the post responsibility system and energy consumption quota management and other forms, and integrating it into the economic responsibility system assessment, and through activities such as "public innovation, cost reduction and efficiency increase", "energy saving financial ideas", "cost control", "index competition" and "resource comprehensive utilization management and control", etc., in 2019, the company won the honor of more than 10 provincial level Among them, the "dynamic management and control of mine resources" won the second prize of the state, the first prize of Shandong Cement Industry Association and circular economy, the homogenization and upgrading of cement mill storage, the energy-saving and efficiency increasing technical transformation of 9mw waste heat power condenser, and the energy-saving and stable production and quality improving transformation of raw meal reduction won the second and third prizes of Shandong Cement Industry Association , the efficiency improvement of waste heat power generation, cement grinding system and rotary kiln system won the third prize of Shandong Province for the scientific and technological transformation of circular economy.

The company continuously deepens management and control measures, improves incentive plans, and conducts various training and competition activities

The company has made remarkable achievements in energy-saving management experience, energy-saving technology progress and energy-saving cultural awareness by continuously strengthening the energy-saving awareness of employees and developing their ideas.

The total energy saving is 180936gj. The carbon dioxide reduction equivalent is 247267 tons.

Plan

With the operation of the energy management and control center as the leading role and the three-level management as the main starting point, the energy consumption will be continuously reduced and the coal reduction and replacement work goal of the national development and Reform Commission will be achieved through energy conservation management, technology energy conservation, structural energy conservation and other measures. The company has established an energy management and control center, which is responsible for the implementation and promotion of the company's energy management; the general manager is responsible for the commitment to support the energy management system, and continuously improve the effectiveness of energy management, establish the company's energy policy, and ensure the establishment of the company's energy target indicators; the workshop principal is a member, to ensure the operation of the workshop's energy management system, and ensure the company's energy target indicators Target completion; each workshop establishes an energy management team, with the person in charge of each workshop as the team leader, establishes the energy target indicators of the workshop, and the team leader and section leader as members to ensure the completion of the company level energy target indicators; implements the company workshop team three-level management, with the first level responsible for the first level, the team responsible for the post, the workshop responsible for the team, and the company responsible for the workshop. Set up special energy funds and formulate incentive plans.

“Advocate green life and implement clean production ”

—Wang Cong xi , Production manager

Do, Check, Act

The company's energy management and control center has 1 registered energy manager, 2 energy managers, 6 professional energy managers, and 15 other energy managers. It formulates annual energy conservation plan, defines energy conservation objectives, work direction, and monthly energy performance parameters. The energy management and control center shall assign special personnel to issue daily analysis report, analyze the energy consumption situation of relevant responsible persons and formulate relevant safeguard measures; issue monthly summary every month, which shall be benchmarked by the year-on-year, month on month, intra group, same industry and domestic advanced level. Relevant responsible person shall analyze the daily and monthly energy consumption and formulate relevant guarantee measures. The energy management and control center shall formulate energy consumption plan monthly and annually according to the actual situation of the company, distribute it to relevant workshop departments and offices, and strictly reward and punish them.

The company conducts energy audit, energy system certification evaluation, energy measurement audit, measurement instrument monitoring equipment improvement and other relevant methods and measures through a third-party organization, evaluates the completion of energy performance, finds opportunities for energy performance improvement, and system improvement measures; invests in methods and measures such as automatic collection system of capital and electricity, digital energy management system, and data statistics and analysis management system Shi, not only pays attention to energy

management in ideology, but also can be applied to production and operation, which provides a strong guarantee for energy conservation, emission reduction, cost reduction and efficiency increase of enterprises.

Analyze the current situation: determine the energy efficiency benchmarking index system through the production process, equipment and products of the enterprise, carry out statistical analysis, energy audit, energy balance, testing, etc. to obtain the basic data of the energy efficiency benchmarking index system; determine the benchmark: collect the advanced energy efficiency indexes within the group and in the same industry at home, and determine the final benchmark index; develop the scheme: establish the database, and compare the data Benchmarking: analyze the actual situation of the company, find out the gap, analyze the reasons, determine the energy efficiency benchmarking scheme, study and demonstrate the scheme according to the energy efficiency benchmarking scheme, and determine the best index improvement scheme; benchmarking practice: formulate a plan to carry out the energy efficiency benchmarking work, implement the relevant responsibilities, and form the report on the implementation effect of the energy efficiency benchmarking after the completion of the phased progress ; benchmarking evaluation: formulate energy efficiency benchmarking evaluation methods, standards and implementation rules, and evaluate in a timely manner; continuous improvement: optimize indicator management workflow, improve rules and regulations, and achieve benchmarking daily management. According to the monthly energy performance parameters, the energy management and control center analyzes and evaluates the energy performance and whether the target value of the energy performance parameters is reasonable through the year-on-year comparison and other methods, combined with the actual production situation.

(1) Respect the law and implement the standard mechanism: abide by the relevant national and local laws and regulations on the large side, and abide by the company's rules and regulations on the small side.

(2) Whole process control mechanism: including energy audit, energy utilization monitoring, energy efficiency benchmarking, energy balance, enterprise energy conservation standardization, energy conservation assessment and review, contract energy management, power demand side management, energy management and control center, cleaner production audit, etc.

(3) Technology progress mechanism: energy management technology progress, energy-saving equipment technology progress, talent technology progress.

(4) Cultural promotion mechanism: material culture, institutional culture and spiritual culture

Transparency



Lessons Learned

At present, the company's energy consumption index data have been at the advanced level in the cement industry, and the space for energy conservation is becoming smaller and smaller. First of all, the demand of building materials market has become smaller in recent years, the overall benefit of the industry is not optimistic, some new energy-saving processes and new technologies are invested more, and the payback cycle is long. The method to overcome this problem is to strengthen employees' awareness of energy conservation, encourage employees to carry out small energy-saving reform and formulate corresponding incentives. We should encourage mechanisms and formulate plans to promote new energy-saving technologies. First, we should implement phased implementation with less investment, quick results and large investment.

Secondly, the high-quality talents are in short supply, and the highly educated people are unwilling to enter the building materials industry; measures: overall thinking, external recruitment and internal promotion; the group's operation area to build talent strategy, talent in the 21st century, external absorption and introduction of highly educated and high-tech talents; more attention is paid to the cultivation of internal personnel, the second education promotion, professional skills learning, comprehensive talent training, and give rise to development. The space makes the enterprise more attractive.

With the group's energy management concept as the guiding ideology and three-level management and control as the starting point, we have formulated "one goal", "two breakthroughs" and "four long-term mechanisms"; one goal: to reduce energy consumption continuously;

Two breakthroughs: management breakthrough and technology breakthrough;

Four long-term mechanisms: respecting the law and implementing the standard, controlling the whole process, technological progress and cultural promotion.

Through the Energy Management Working Group (EMWG), government officials worldwide share best practices and leverage their collective knowledge and experience to create high-impact national programs that accelerate the use of energy management systems in industry and commercial buildings. The EMWG was launched in 2010 by the Clean Energy Ministerial (CEM) and International Partnership for Energy Efficiency Cooperation (IPEEC).

For more information, please visit www.cleanenergyministerial.org/energymanagement.

