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ABSTRACT

Due to today's competitive conditions and rising energy prices, the efficient use of energy consumed by facilities is only possible with the energy savings that can be made by investing in time, updating the technology, optimizing operating conditions and constant controlling. In this direction, The Bar Rolling Mill authorities have started this work to detect possible energy losses on the site and to increase energy efficiency. Measurements and evaluation of the results were made on the surface insulation inspections in annealing furnace, annealing furnace flue gas and annealing furnace cooling water, compressors, compressed air lines, pumps and annealing furnace burning air fan and hydraulic motors in Bar Mill. In the studies of the measurements, each equipment and line were examined separately and necessary calculations were done. Some suggestions were made on determined points which cause energy losses, how much loss is realized through these points and necessary investments to compensate for these energy losses, the price information. In the light of these works carried out in the factory; It is possible to save a total of 1,767,120.04 kWh/year energy and 441,780.01 ₺/year saving of money. Total investment cost is 558,500.85 ₺. The average return on investment (ROI) for all application plans is 1.26 years. After all these improvements, CO₂ emission values will be reduced to 1,030.23 tons per year.

Keywords: Bar Rolling Mill, Energy Efficiency, Energy-Saving, Annealing Furnace, Pump, Hydraulic Motor.

043 USE OF MARBLE WASTE AS ALTERNATIVE RAW MATERIAL FOR SUSTAINABLE CEMENT PRODUCTION

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ABSTRACT

The materials which have the property of hardening and bonding the materials around it in the reaction with water are called "Hydraulic Binder". Cement; it is a water-insoluble hydraulic binder which subsequently hardens with water and air. The increase of the world population, the widespread of reinforced concrete construction, improvement of construction techniques increases the need of cement every day. The cement manufacturing sector is at the forefront of natural raw materials-intensive sectors. Raw materials containing silicon, aluminum, calcium and iron-oxide are used in cement production. Limited natural resources are one of the obstacles for cement manufacturing industry. Mankind has tried to decorate buildings, houses and other places where they live from marble which is natural stone since the early ages. Over time, societies that have raised their living standards have made marble a symbol of wealth and prosperity because of its beautiful appearance and durability. This is evidenced by the increase in the use of marble in parallel with the developing industry and technology. There are two types of waste generate during the extraction and processing of marble blocks; particulate and dust. The waste formed in huge quantities causes various negative effects on environment. The use of marble waste as an alternative raw material in the cement sector reduces the use of non-renewable resources and prevents rapid depletion of natural resources. The purpose of this study is to demonstrate sustainable production in the cement