

# بهینه‌سازی مصرف انرژی در کارخانجات قند نیشگری

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## چکیده

در این مقاله ضمن ارائه نتایج حاصل از ممیزی انرژی در یک کارخانه قند نیشگری در استان خوزستان، وضعیت مصارف انرژی و شدت انرژی برای تولید شکر در آن با استانداردهای جهانی مقایسه می‌گردد و راهکارهایی جهت بهینه‌سازی مصرف انرژی در این کارخانه ارائه می‌شود. همچنین نقش نیشگر در تولید انرژی و در نتیجه اقتصاد ملی مورد بررسی قرار گرفته و پیشنهادهایی در این زمینه ارائه می‌گردند.

واژه‌های کلیدی: بهینه‌سازی انرژی، کارخانجات قند نیشگری، انرژی موجود در نیشگر، نیشگر پر انرژی، انرژی موجود در باگاس

# Energy Conservation in The Cane Sugar Industry

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## ABSTRACT:

Sugar cane is a crop with unique capacity to trap sunlight energy, converting it into chemical form, which may retain energy in reserve for months. Sugar cane has the highest harvest index (ratio what is utilized to what is grown in the field) of all crops. All components of the crop have economic value. The prime product, sucrose or better known as sugar, plays an important role in providing daily human body's need for energy. In addition to this, the residual molasses has value as cattle feed and can be fermented to ethanol. Bagasse, the fibrous material issuing from the extraction plant, is well suited for use as fuel and can be burned to produce the energy for processing the cane and generating electrical power. It can also be used for making paper, pressboard and other cellulosic products.

Cane sugar factories not only can meet their own processing plant demand for energy, but also can export their excess energy. On average, every ton of sugar cane can produce 100 kWh energy. Some countries produce a significant portion of their energy from their cane sugar factories. Mauritius for example 26% of the country total usage of power is supplied by sugar factories.

In Iran the province of Khuzestan has vast fields and water resources suitable for cane flourishing, which not only can stop nearly one million tons annual import of sugar, but also export sugar and electricity. This will have a positive impact on the region economy.

This paper presents the results of an energy auditing study carried out in a cane sugar factory in Khuzestan, showing its energy usage for sugar production compared with world standards. The paper also proposes measures for improving the energy efficiency in the factory.