

Sector Highlights

Cement is one of the basic construction materials. According to CMAN (Cement Manufacturers Association of Nepal) there are 45 cement plants active in Nepal, with a total installed capacity of 6 million tons per annum (CMAN 2013/14). Of the total 45 units, 12 produce clinker meeting almost 60% of the domestic demand. The annual requirement of 4 million tons is met from domestic sources contributing 80%. The capacity utilization of cement units is of around 50%.

Load shedding is one of the major problems with costlier diesel generation leading to an additional manufacturing cost. With foreign direct investment (FDI) and capacity addition envisaged, the Nepalese cement sector is going through a transitional phase.

Energy Use

Main sources of energy used in the Cement industries in Nepal are electricity and coal and Diesel Generator power plant. Coal is mainly used in limestone-based units for calcinations, whereas in some cases, in plants having co-generation system used for electricity generation.

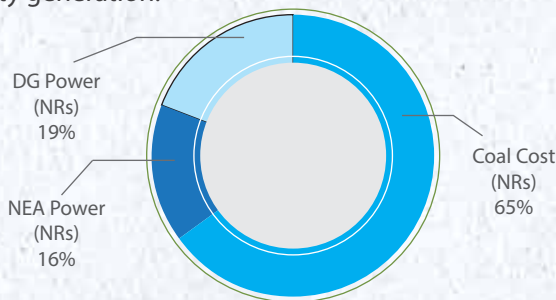


Figure 1: Energy use in Nepalese Cement industry (GIZ/NEEP, 2012) ¹



Nepal Cement Industry by numbers

6 million tons per annum installed capacity
 3.2 Million Tons per annum production
 45 units in operation

12 of which are Clinker Producing
 4543 person employment*
 Capacity Utilization about 50%
 Diesel power impacts NPR 1000-1500 per ton of cement

CMAN 2013/14

Types of Cement Plant	Specific Energy Consumption	Baseline 2012 ¹	2015 Scenario ²	Potential Target
Limestone based	Electrical	149 kWh/t*	80 – 550 kWh/T*	65-140 kWh/T*
	Thermal	1295 kCal/kg**	779 – 1071 kCal/kg**	710 – 875 kCal/kg**
Clinker based	Electrical	49 kWh/T*	38 kWh/T*	34 kWh/T*

* MT Cement ** MT Clinker

Table 1: Specific energy consumption in Nepalese Cement Sector)

Experiences from the past have identified many energy saving options for the cement sector that are highly profitable with payback periods of investment of less than 3 years.

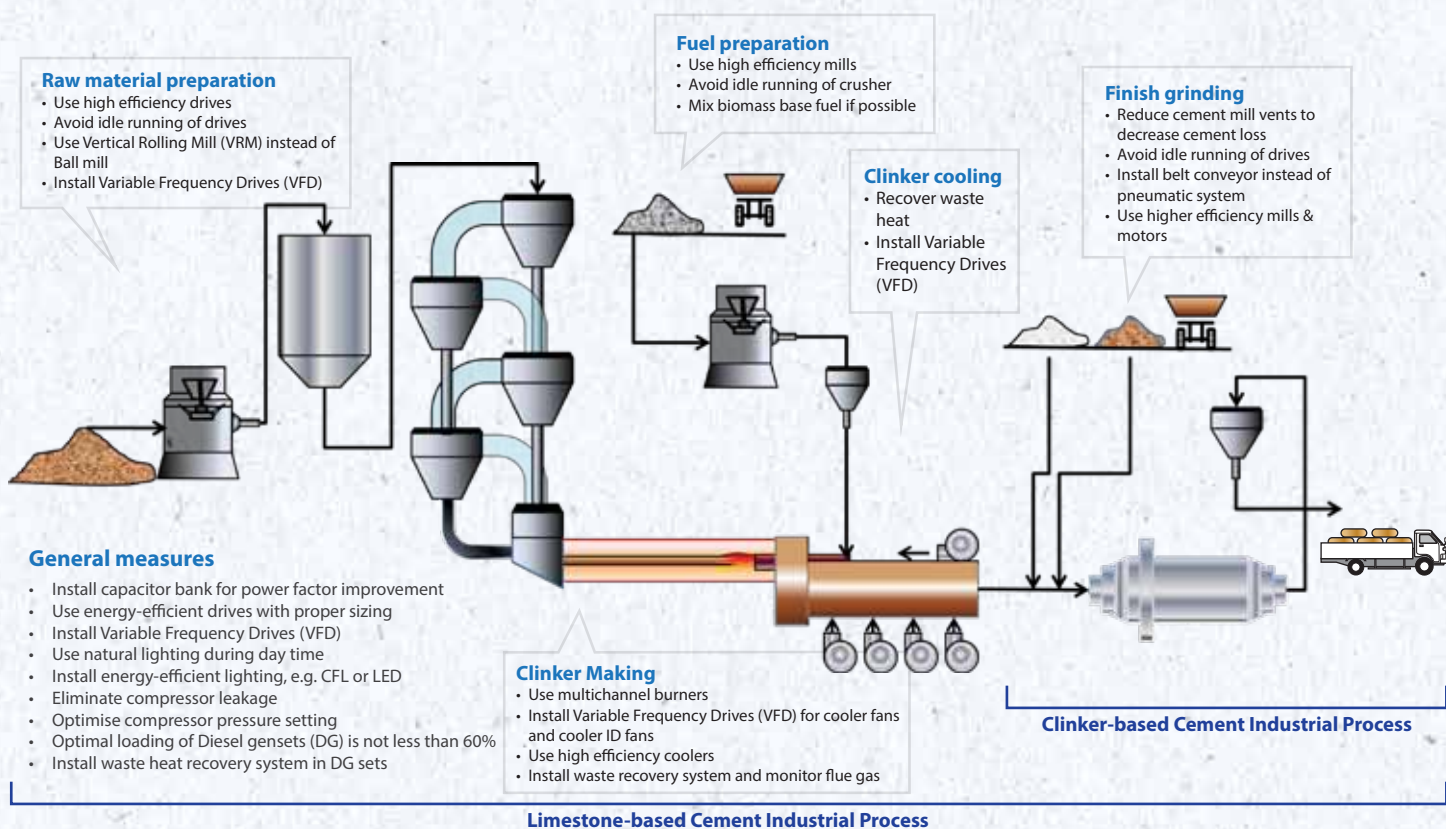
Option	Payback of investment
Reduction in power consumption of Pre-heater fan due to reduction in exit temperature of PH gas	Immediate
Reduction in power consumption in cooler Fan-2 by avoiding pressure drop due to manual shut off damper	Immediate
Energy Savings by Arresting False Air in Cooler Bag House	Immediate
Reduction in Heat Loss due to CO Formation	Immediate
Efficiency Improvement of Cooler Fans	10 months
Efficiency Improvement of Cement Mill Vent Bag House Fan	1 year
Reduction in Kiln Radiation and Convection Loss by installing new refractory lining in burning zone	10 months
Replacement of Conventional Lights by LED	1.5 Years
Partial Replacement of Coal with Rice Husk (5% of coal replaced by rice husk)	5 months
Capacity enhancement and reduction in energy consumption in Cement Mill section by having a combine circuit of roller press and ball mills	2.1 years

Table 2: Energy saving option and payback period of investment for cement sector (EEC/NEEP, 2015)

¹ GIZ/NEEP, 2012: Baseline study of selected sector industries

² EEC/NEEP, 2015: Pre-market assessment of audited industries

Energy Saving Tips



Case Study

Energy Audit conducted by EEC under NEEP, recorded specific energy consumption (SEC) of 250kWh/Ton of electricity and 1,415Mcal/Ton of Coal in one of the cement units with a total capacity of 98,575T/year. The industry was able to reduce its specific energy consumption to 240 and 1,071 respectively after implementing the recommended process optimization measures: the industry was able to make saving of NPR 193 million annually.

During energy audit (SEC):	250 kWh/T and 1415 MCal /T @ Coal
After Implementation (SEC):	240 kWh/T and 1071 MCal /T @ Coal
Savings Per Ton:	10 kWh/T and 344 MCal /T @ Coal
Total Production:	98,575 T
Annual Savings :	985,750 kWh and 7536 T of coal @ 4500Kcal/kg
Monetary Savings:	Rs. 4,928,750@5/kWh and Rs. 188,400,000@25/ kg.
Total Investment Made:	Negligible (through Process optimization)

Table 3: A success case from NEEP (EEC/NEEP, 2015)

Contact details

If you are interested to know more about energy efficiency, please, do not hesitate to contact us!

- If you are a business man

get information about energy saving opportunities in your company and get an energy audit done by our professional expert team

- If you are an engineer

explore the articles in our energy efficiency knowledge website and participate in our training programs

- If you are a banker...

participate in our awareness raising seminars and explore the new market of energy efficiency investment.

- If you are an energy auditor...

register in our database of energy efficiency professionals and be listed on our webpage.

- If you are a supplier for energy-efficient technology

register in our online B2B portal and list your products and services.



Federation of Nepalese Chambers of Commerce and Industry (FNCCI)

Pachali Shahid Shukra FNCCI Milan Marg, Teku
P.O. Box 269, Kathmandu, NEPAL

Website: <http://eec.fncci.org>

Telephone : (+977-1) 4262061 / 4262218

Fax : (+977-1) 4261022 / 4262007

Email: eec@fncci.org

Join us in "Energy Efficiency Nepal" group facebook page

