

The Greening Of Technology at



JK LAKSHMI
C E M E N T L t d.

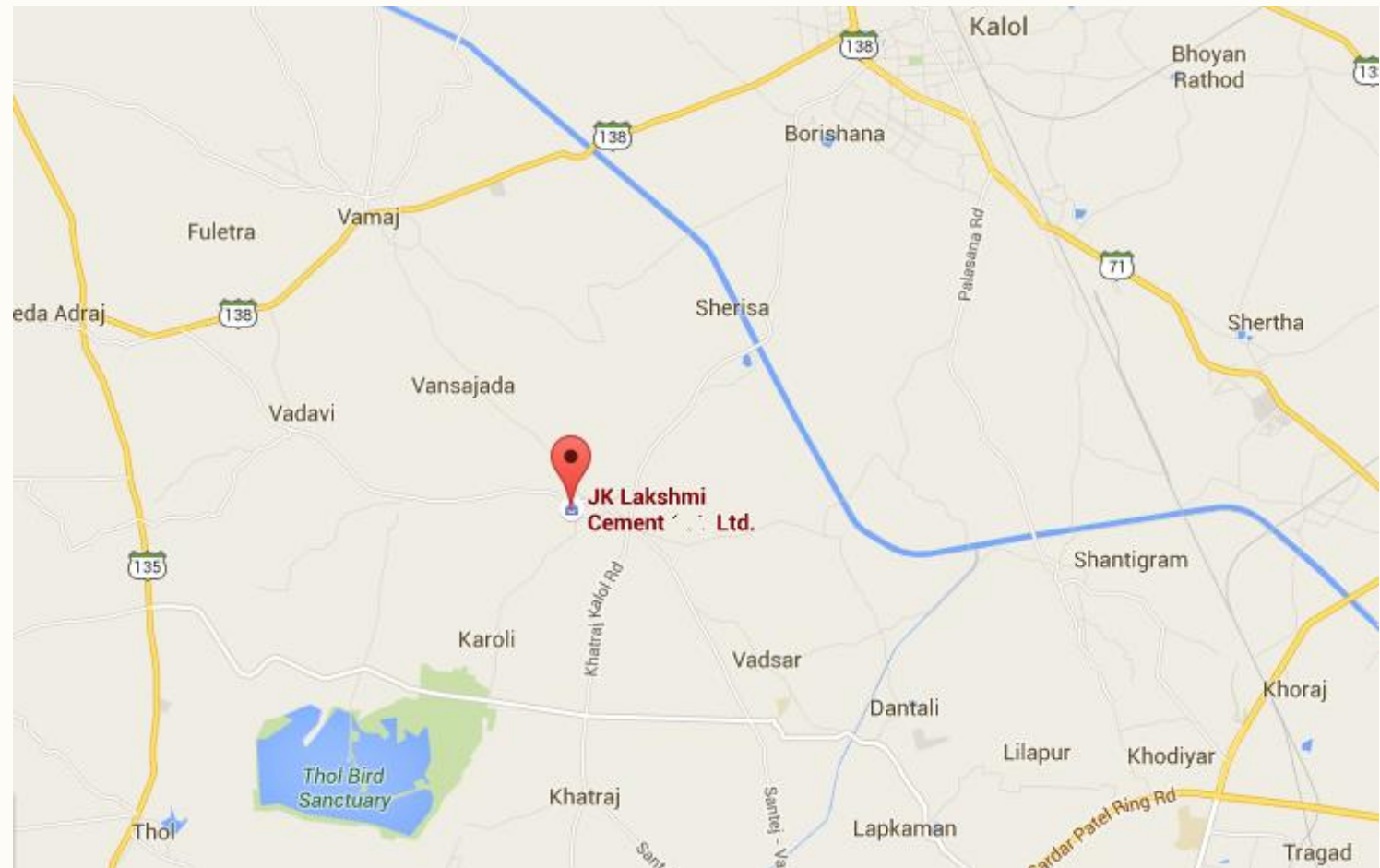


Best Practices in Cement
Grinding Units – A Case Study

JK Lakshmi Cement Limited (JKLCL)



JK Lakshmi Cement Limited Grinding Unit, Kalol, Gujarat





Confederation of Indian Industry



CII - Sohrabji Godrej Green Business Centre

hereby certifies that

JK Lakshmi Cement Limited, Kalol

has successfully achieved the standards as required for the following level of certification under the GreenCo - Green Company Rating System which is valid for a period of 3 years

GreenCo Silver June 2015



Jamshyd N Godrej
Chairman
CII-Godrej GBC



Pradeep Bhargava
Chairman
GreenCo Rating System



L S Ganapati
Chairman
GreenCo Assessor Panel



S Raghupathy
Executive Director
CII-Godrej GBC



BUREAU VERITAS Certification

JK LAKSHMI CEMENT LTD.

MOTI BHOYAN VILLAGE, TALUKA KALOL, (IN CL) DIST. GANDHINAGAR, GUJARAT - 382 721, INDIA.

Bureau Veritas Certification Holding SAS - UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System standards detailed below:

Standards

ISO 9001:2015 & BS OHSAS 18001:2007

Scope of certification

MANUFACTURING & PACKING OF OPC & PPC CEMENT

Certification cycle start date: 11 April 2014
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 10 April 2015
Original certification date: 20 February 2013
Certificate No. IND16.8188AU Version: 1 Revision date: 11 April 2016



Signed on behalf of BUREAU VERITAS - UK Branch
Ramesh KOREGAVI
Director, CERTIFICATION
South Asia Region

Local office:
Bureau Veritas Certification
25th Floor, 68 Piccadilly Street, London, W1P 8EG, United Kingdom
Tel: +44 (0)20 7596 9000
Fax: +44 (0)20 7596 9001
E-mail: uk@bv.com
Web: www.bv.com



BUREAU VERITAS Certification

JK LAKSHMI CEMENT LTD.

MOTI BHOYAN VILLAGE, TALUKA KALOL, (IN CL) DIST. GANDHINAGAR, GUJARAT - 382 721, INDIA.

Bureau Veritas Certification Holding SAS - UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System standards detailed below:

Standards

ISO 9001:2015, ISO 14001:2015 & BS OHSAS 18001:2007

Scope of certification

MANUFACTURING & PACKING OF OPC & PPC CEMENT

Original cycle start date: 20 February 2013
Expiry date of previous cycle: 19 February 2016
Recertification Audit date: 27 April 2016
Recertification cycle start date: 11 April 2016
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 10 April 2015
Certificate No. IND16.8188AU Version: 2 Revision date: 11 April 2016



Signed on behalf of BUREAU VERITAS - UK Branch
Ramesh KOREGAVI
Director, CERTIFICATION
South Asia Region

Local office:
Bureau Veritas Certification
25th Floor, 68 Piccadilly Street, London, W1P 8EG, United Kingdom
Tel: +44 (0)20 7596 9000
Fax: +44 (0)20 7596 9001
E-mail: uk@bv.com
Web: www.bv.com




BUREAU VERITAS Certification

Greenhouse Gases Verification Statement

For

JK Lakshmi Cement Limited (Grinding Unit, Kalol)

Moti Bhojan (Village), Kalol (Taluka), Gandhinagar (Dist), Gujarat, India.

For Organization Boundaries
Covering the operations and management of Grinding Unit of JK Lakshmi Cement Limited at Kalol

Bureau Veritas Certification India Private Ltd has carried out the verification of the quantification of Greenhouse Gas emissions of the above organization as per ISO 14064-3:2006. The Greenhouse Gas emission quantification and reporting is found to be in accordance with the requirements of the standard detailed below:

STANDARD

ISO 14064 - 1: 2006

SCOPE OF VERIFICATION

Greenhouse Gas emissions and removals:

- Direct Emissions: 28 tonCO₂-equivalent
- Energy Indirect Emissions: 15809 tonCO₂-equivalent
- Other Indirect Emissions*: 9184 tons CO₂-equivalent
- GHG Removals: Not quantified
- Emission due to Biomass Combustion: Nil

* Limited to verification of reported emission sources for the reporting period.
Reporting year: 1st April 2013 to 31st March 2014
Level of Assurance: Reasonable

VERIFICATION REPORT REFERENCE: INDIA-VER/29.50/2014

To check this certificate validity please call: +91 22 8696 6300

Further clarifications regarding the scope of this certificate and the applicability of the ISO 14064-3:2006 requirements may be obtained by contacting the organization.

Certificate Number: INDIA/GHG/29 - 2014 Date: 26th July 2014



Ramesh KOREGAVI
General Manager, CER - South Asia Region

Local office:
Bureau Veritas Certification
25th Floor, 68 Piccadilly Street, London, W1P 8EG, United Kingdom
Tel: +44 (0)20 7596 9000
Fax: +44 (0)20 7596 9001
E-mail: uk@bv.com
Web: www.bv.com



BUREAU VERITAS Certification

JK LAKSHMI CEMENT LIMITED

VILLAGE - MOTI BHOYAN, TALUKA - KALOL, GANDHINAGAR - 382 721, GUJARAT, INDIA.

Bureau Veritas Certification certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standards detailed below:

Standard

ISO 50001:2011

Scope of certification

MANUFACTURING & PACKING OF OPC & PPC CEMENT

Certification cycle start date: 28 April 2016
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 28 April 2019
Original certification date: 28 April 2013
Certificate No. IND 16.8311/Ea Version: 1 Revision date: 28 April 2016



Certification Authority
Ramesh KOREGAVI
Director, CERTIFICATION
South Asia Region

Local office:
Bureau Veritas Certification
25th Floor, 68 Piccadilly Street, London, W1P 8EG, United Kingdom
Tel: +44 (0)20 7596 9000
Fax: +44 (0)20 7596 9001
E-mail: uk@bv.com
Web: www.bv.com



BUREAU VERITAS Certification

JK LAKSHMI CEMENT LTD.

MOTI BHOYAN VILLAGE, TALUKA KALOL, (IN CL) DIST. GANDHINAGAR, GUJARAT - 382 721, INDIA.

Bureau Veritas Certification certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System standards detailed below:

Standards

ISO 14001:2015

Scope of certification

MANUFACTURING & PACKING OF OPC & PPC CEMENT

Certification cycle start date: 11 April 2016
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: 10 April 2019
Original certification date: 20 February 2013
Certificate No. IND18.8188VE Version: 1 Revision date: 11 April 2016



Certification Authority
Ramesh KOREGAVI
Director, CERTIFICATION
South Asia Region

Local office:
Bureau Veritas Certification
25th Floor, 68 Piccadilly Street, London, W1P 8EG, United Kingdom
Tel: +44 (0)20 7596 9000
Fax: +44 (0)20 7596 9001
E-mail: uk@bv.com
Web: www.bv.com

“Greening The Technology”

“Green Technology is More About Reduction
Than Anything Else”

“Green Technology is More About
Reduction Than Anything Else”

Let Us See How JKLCL Has Put this Saying
into Practice ?

Reduction in Land Requirement (Plot Size)

**JKLCL Has Set Up It's Green Field Grinding Units @
55000 Tons/Annum/Acre (Average)**

Compared to General Practice in the industry of
approx.@ 30000Tons/Annum/Acre

Reduction in Capital Investment

**JKLCL Green Field Grinding Units are Set Up @ Rs.
1000-1300 / Ton Against Industry Average of Rs.1500-
1800 / Ton**

And

**Brown Field Projects are Implemented at approx. @
Rs. 500-800 / Ton.**

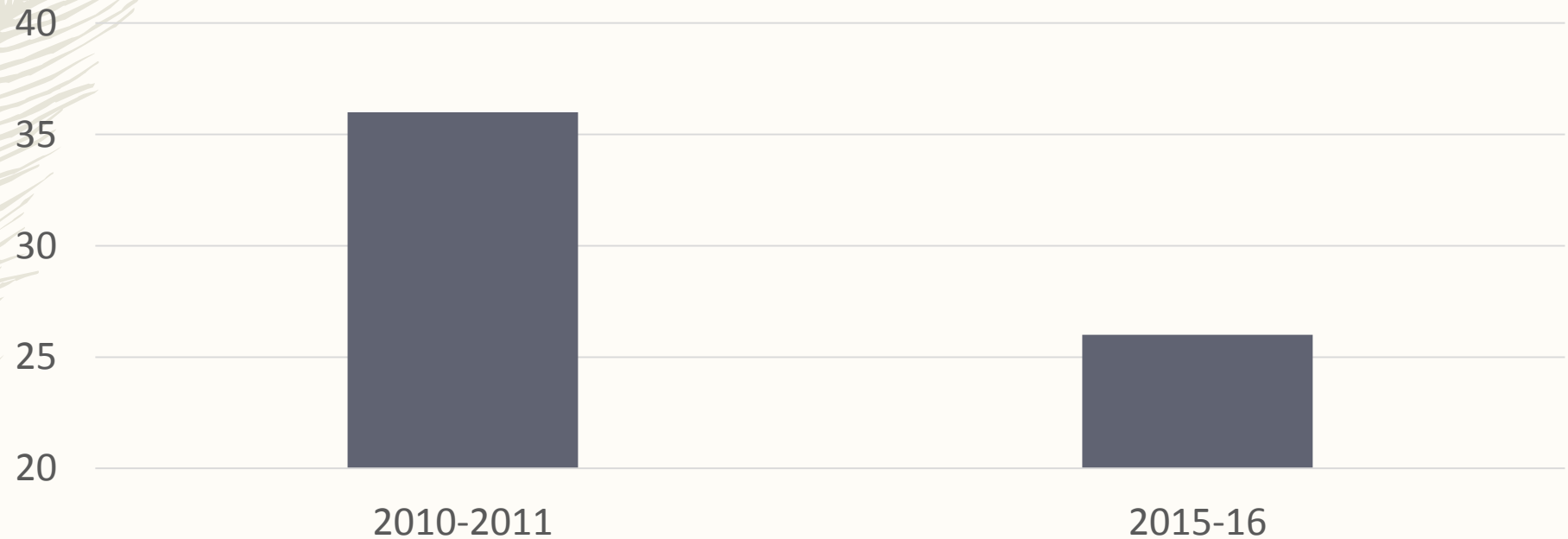
Reduction in Material Handling Distance

In Our Grinding Units Average Distance Travelled by Clinker from Clinker Dump Hopper/Tipler to the Clinker Silo varies between 15 to 45 Meters and From Clinker Silo to Mill Feed About 18 Meters. From Mill Feed to the Cement Packers the Distance Travelled by Cement is approx. 87 Meters.

Average Material Handling Horizontal Distance Varies between 120-150 Meters Only.

Reduction in Power Consumption at Kalol

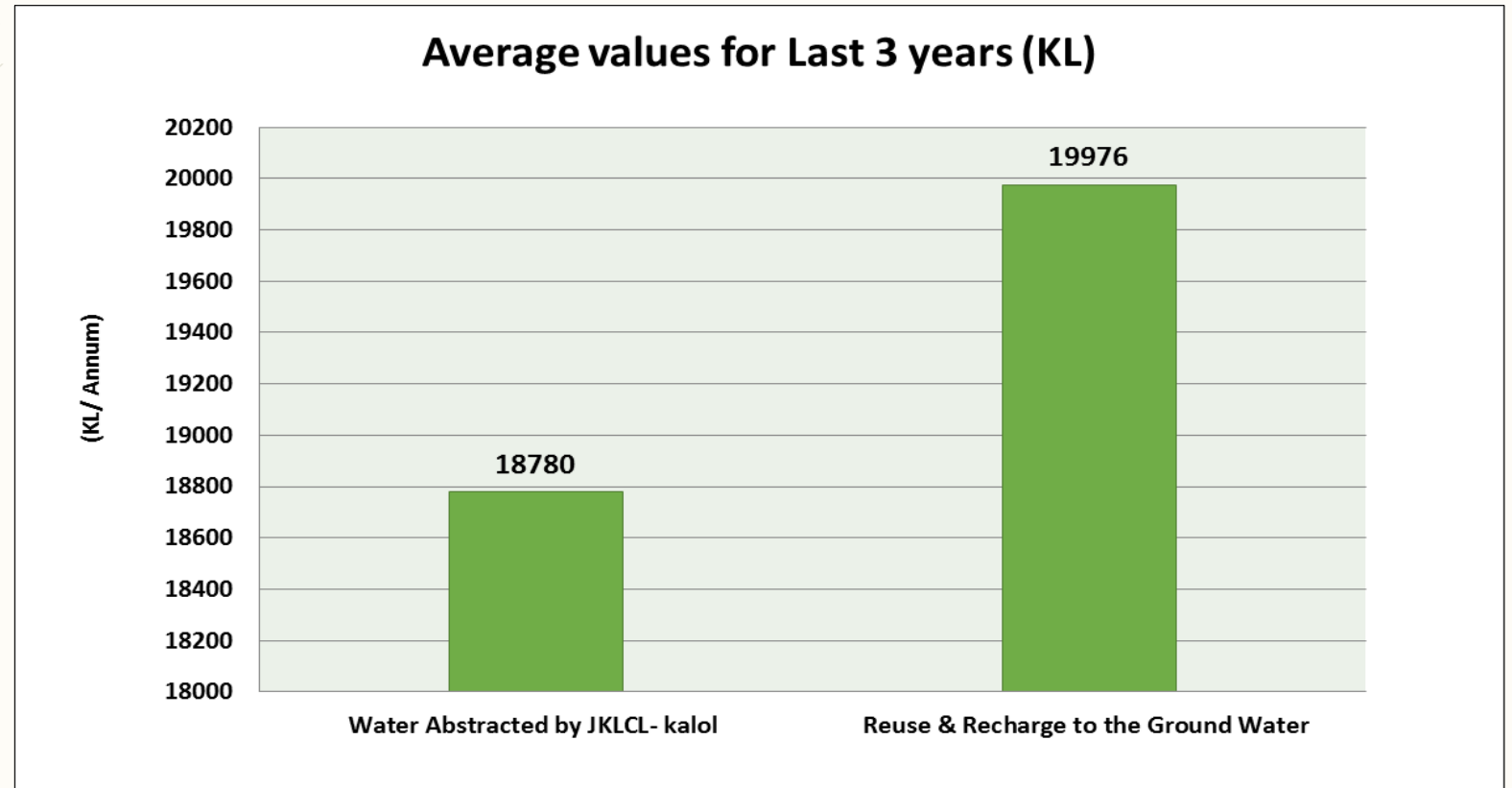
Reduction in Power Consumption kWh/Ton of Cement



Reduction in Power Consumption

- Direct Feeding Chute for Clinker Hopper- **Power Saving, Material saving**
- VFD For Small And Medium Size Fans- **Power Saving**
- Use of Compressed air for packing plant from Cement mill Screw Compressor- **Power saving**
- Installation of hammer crusher – **Power saving, Reduced GHG footprint**
- Third Unloading Line for Fly Ash Unloading system – **Power saving**
- Improvement in Mill Main Gear Box Cooling- **Power saving**
- Operation of cooling fan for water tank through DCS – **Power saving**
- Bag Filter Ducting Optimization – **Fugitive dust emission control**
- Removal Of Belt Conveyor (530 Bc2) At Clinker Silo - **Power Saving**
- Economizing The Compressor System- **Power Saving**
- Removal Of Belt Conveyor (530 BC12) In Hopper Feeding Group- **Power Saving**
- Increase in Lowering Speed of Truck Tippler - **Power Saving**
- Additional Dust Extraction Line on Clinker Elevator and Covering from Sides- **Fugitive dust emission control**
- Lighting Transformer - **Power Saving**
- Energy efficient lightning- LED's- **Power Saving, Reduced GHG footprint**
- Installation of scrap air slide cloth at tripler- **Fugitive dust emission control**

Reduction in Ground Water Abstraction



Water Positivity : Innovative Rain water Harvesting Arrangement



Scientifically Designed **6 nos.** of Rainwater Harvesting Structures

Almost 100% Roof Tops are Covered under Rainwater Harvesting

41% Reduction in Fresh Water Consumption Since 2011

Unit Has Turned from **Water Neutral** to **Water Positive**

Augmenting **Ground Water Resources**

Resulting elevated water table and reduced TDS level in GW

Salient Features of RWH



[CLICK FOR THE VIDEO](#)

Slope Engineered paved area with connected drains for maximum rain water harvesting

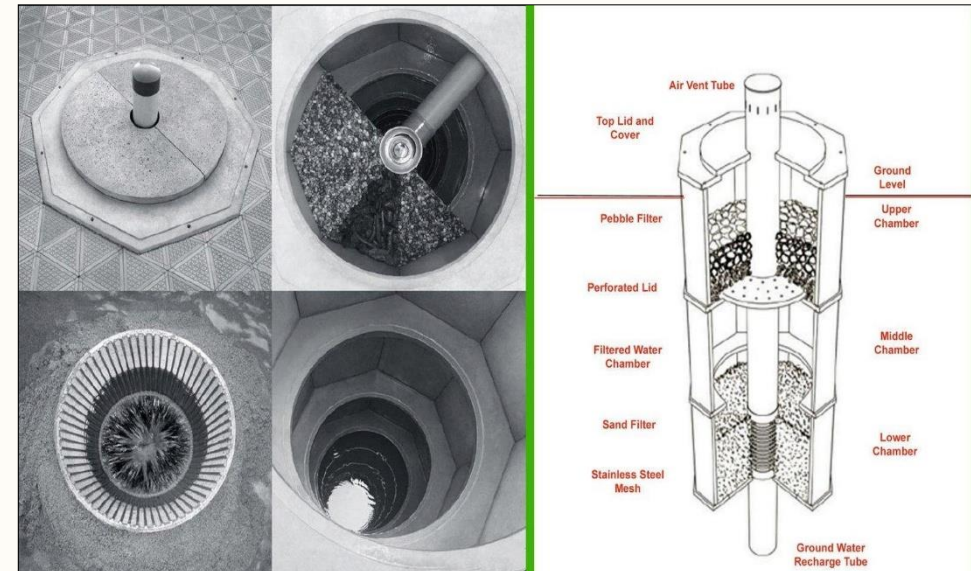


Roof top structures with 100% roof top water harvesting



Engineered Inter-Connected drainage system

Most innovated and scientifically built rainwater harvesting structures





**Rooftop Rain Water Collection System
from Covered Storage Yards and Office
Buildings**



Reduction in Waste Water

Zero Waste Water Discharging Unit

Innovative Packaged Type Sewage Treatment Units

One and First of its Kind that are Successfully Operating in the
Cement Industry.

Least Amount of Sludge Generating Property

Total 3 Nos. of such Units of 06 KL Capacity are existing in the
premises.

100% Treated Water is used in Maintaining Gardens, Greenbelt
& Plantation within the Plant Premises.



JK LAKSHMI CEMENT LTD.
Grinding Unit, Kalol



GREEN INITIATIVE-05

SEWAGE TREATMENT PLANT



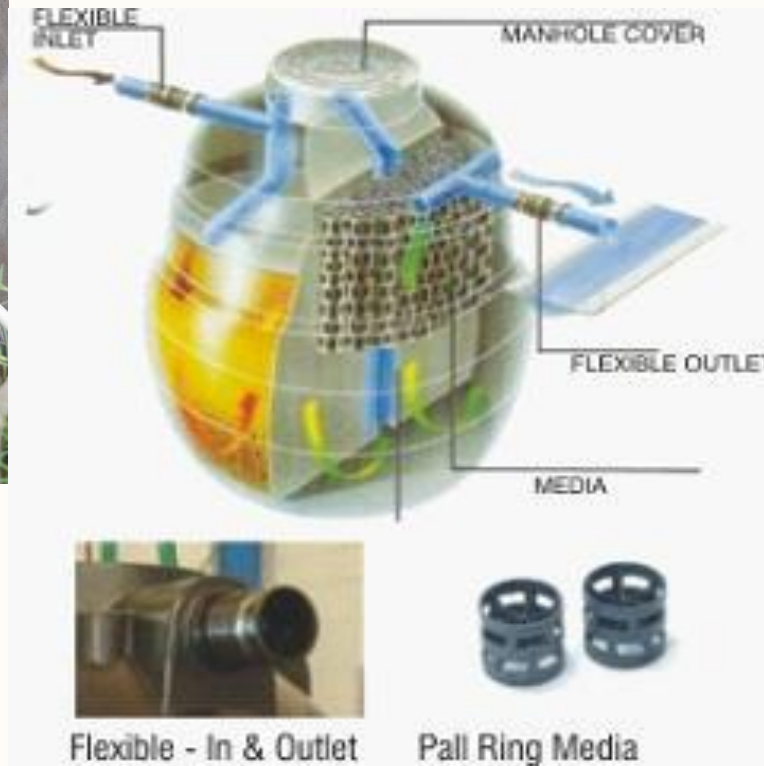
Flexible - In & Outlet Pall Ring Media

1. LOCATION	-NR. NEW TOILET
2. SOURCE OF WASTE WATER	-A. TOILET BLOCK B. WATER COOLER C. GENERAL URINAL
3. PLANT DESIGN CAPACITY	-6000 Lit. /DAY
4. QUANTITY OF WATER RECYCLED	_____ KL/ MONTH
5. PROCESS OF TREATMENT	ANAEROBIC & AEROBIC
6. PROJECT COST	6,48,255/- LACS
7. DATE OF COMMISSIONING	-20 th MARCH 2013
8. USE OF TREATED WATER	-PLANTATION(GREEN BELT DEVELOPMENT)

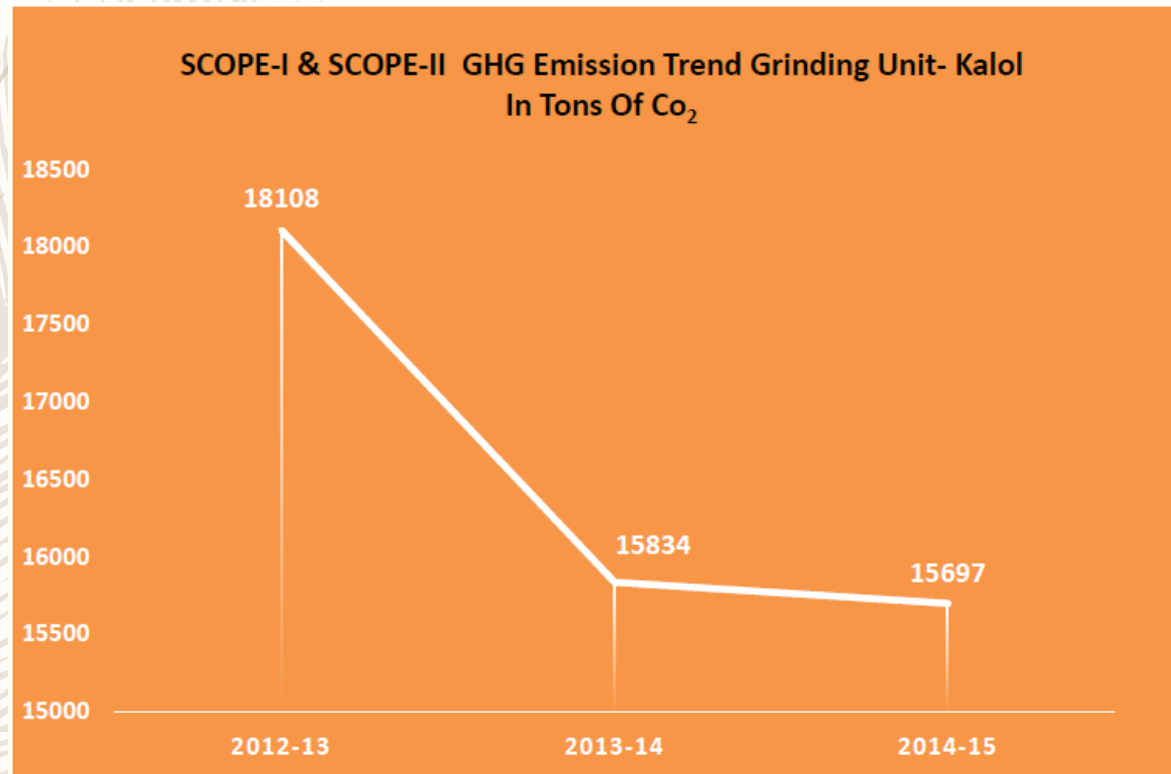
Features - Package Type Sewage Treatment Plant



Package Type Sewage Treatment Unit , in plant premises



Reduction in GHG Emissions



Trend of GHG Emission for last 3 years for Plant Kalol, Gujarat

BUREAU VERITAS
Certification

Greenhouse Gases Verification Statement
For

JK Lakshmi Cement Limited
(Grinding Unit, Kalol)

**Moti Bhojan (Village), Kalol (Taluka),
Gandhinagar (Dist), Gujarat, India.**

For Organization Boundaries
Covering the operations and management of Grinding Unit of
JK Lakshmi Cement Limited at Kalol

Bureau Veritas Certification India Private Ltd has carried out the verification of the quantification of Greenhouse Gas emissions of the above organization as per ISO 14064-3:2006. The Greenhouse Gas emission quantification and reporting is found to be in accordance with the requirements of the standard detailed below

STANDARD
ISO 14064 - 1: 2006
SCOPE OF VERIFICATION

Greenhouse Gas emissions and removals:

Direct Emissions	: 28 tonsCO ₂ -equivalent
Energy Indirect Emissions	: 15809 tonsCO ₂ -equivalent
Other Indirect Emissions*	: 9194 tons CO ₂ -equivalent
GHG Removals	: Not quantified
Emission due to Biomass Combustion	: Nil

*Limited to verification of reported emission sources for the reporting period.

Reporting year: 1st April 2013 to 31st March 2014
Level of Assurance: Reasonable

VERIFICATION REPORT REFERENCE: INDIA-VER/29.50/2014

To check this certificate validity please call: +91 22 6695 6300

Further clarifications regarding the scope of this verification certificate and the applicability of the ISO 14064-1:2006 requirements may be obtained by consulting the organization.

Certificate Number: INDIA/GHG/029 - 2014 Date: 26th July 2014

Ramesh KOREGAVE
Ramesh KOREGAVE
General Manager, CER- South Asia Region

Certificate / Managing Office Address: "Marwah Gate" 6th Floor, Kishanlal Marwah Marg, Opp. Ansa Industrial Estate, Off Sakinaka Road, Andheri (East), Mumbai - 400 072, India.



Reduction in Clinker Consumption

JKLCL Kalol Grinding Unit is Consistently
**Consuming Fly Ash To The Tune of 34-35% in
PPC** i.e. Maintaining Reduced Clinker Ratio in
PPC (approx. 60-62%)

Reduction in Unsafe Conditions and Practices

JKLCL Celebrates **Every First Day of the Month as Safety Day** to Boost Safety Awareness Among Various Stake Holders.

Reduction in Stack Emissions

JKLCL Kalol Grinding Unit Has **Reduced It's Stack SPM Emission Level from 40 Mg/Nm³ to 15 Mg/Nm³** from the Various Stacks Through Improved Maintenance and Monitoring Practices.

Reduction in No. of Drives

Over A Period of Time We **Have Reduced/Stopped Operation of More than 15 Drives in Different Sections of the Plant,** Particularly Through Reduction in Number of Rubber Belt Conveyors.

Reduction in Rotating Equipment Speed

JKLCL, Kalol Has Installed **More Than 19 VFDs** Ranging From 5 kW to 75 Kw to Optimize Speed of Various Rotating Equipment, Mostly Bag Filter Fans, Pumps, Air Slide Blowers, Material Handling Belts etc.

Reduction in Bigger Size Grinding Media Balls

We have Removed Total Grinding Media of 70 mm and Above From the First Chamber of the Two Chambers Ball Mill.

Reduction in Noise Level

- Removal of Bigger Size Grinding Media Balls from the Ball Mill Has Helped us In Reduction of Sound Level By More Than 20 dB.
- Replacement of All Reciprocating Compressors With Screw Compressors Has Reduced Noise Level And Water Requirement in Compressor Section is Eliminated.

Reduction in Product Loading Time

JKLCL has Installed **Automatic Bag Placing Machine**
Coupled With Auto Truck Loading Machine to
Reduce the Product Loading Time

Reduction in Product Loading Time

AUTOMATIC BAG PLACING MACHINE



AUTOMATIC TRUCK LOADING MACHINE



Reduction in Non- Renewable Energy Consumption- A Humble Beginning

- Sourcing Of Power From **IEX** To The Tune Of + 75%, Which Comprises About 25 % Energy From Renewable Sources.
- Sourcing Of Lightning Power Requirement From **Innovative Wind Mill**

Windmill During Initial Phase



[CLICK FOR THE VIDEO](#)

Windmill At Present



Reduction in Solid Waste

JKLCL, Kalol Unit is Successfully Converting Various Organic Solid Wastes Generated within The Plant Premises Like Office Paper Waste, Plant Canteen Waste, Green Belt/Gardening Waste (Cut Grass, Plant Leaves etc.) etc. into **Value Added Vermicompost.**

Green Solutions: Organic Manure – Vermicompost



Effective and Most Energy Efficient Solid Waste Management Practice Followed

Adopting **Natural Way** for Treatment of Organic Solid Waste i.e. Composting

Organic Waste treatment through **Vermicomposting**

Around **3600- 4000 kg** of vermicompost generated per-year

Vermicompost prepared is used as **manure for development of greenbelt and plantation**

Sharing the best practice with stakeholders, visitors



Vermicomposting facility in the premises

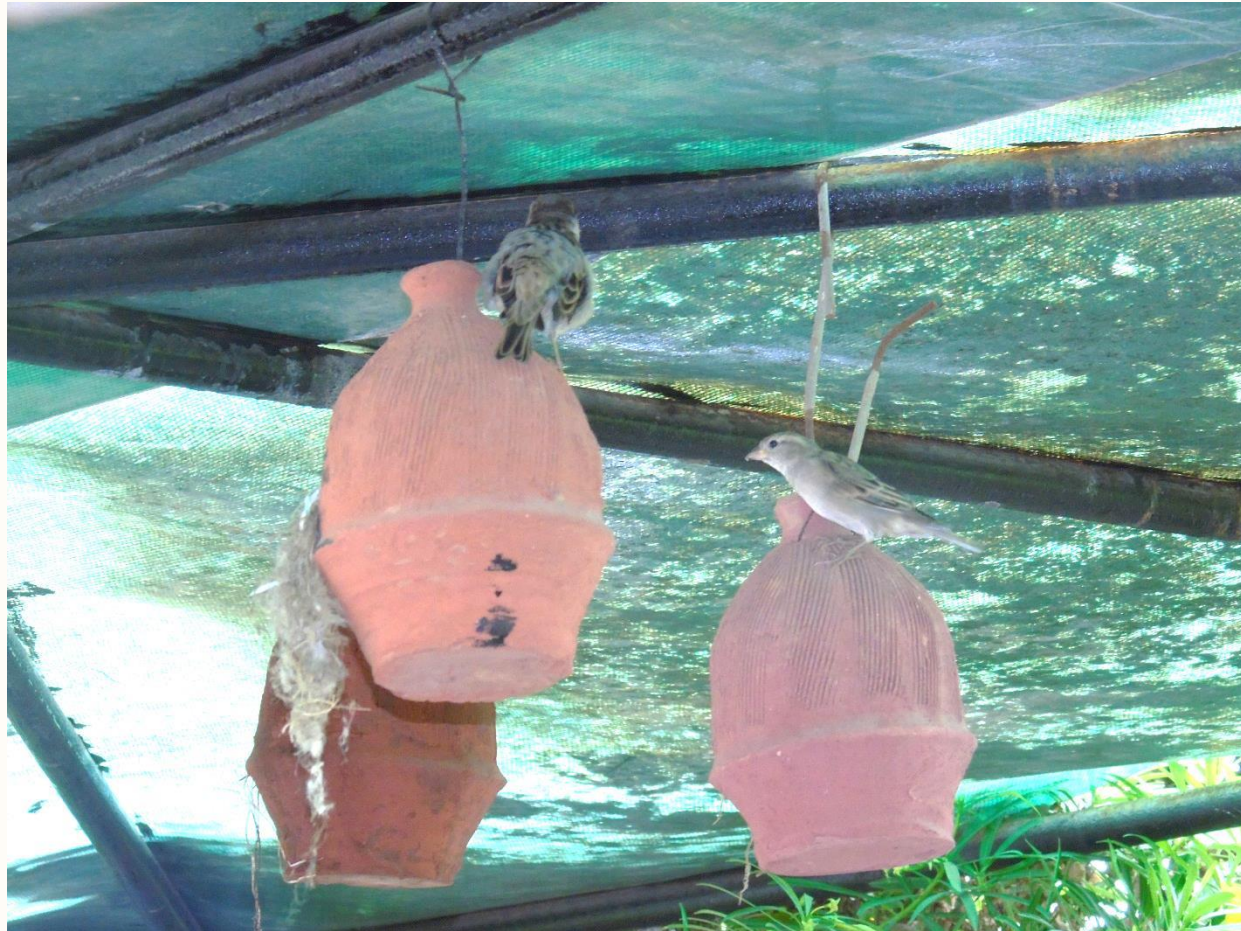


Dried and packed vermicompost packets for plantation drives

Year	Vermicompost generation (kgs)
2014-15	3727 kgs
2015-16	3848 kgs



Reducing Uncertainty Among Faunal Biodiversity







Reducing Future Worries “Broadening Smiles”



[CLICK FOR VIDEO](#)

