

## H & R Johnson India Limited

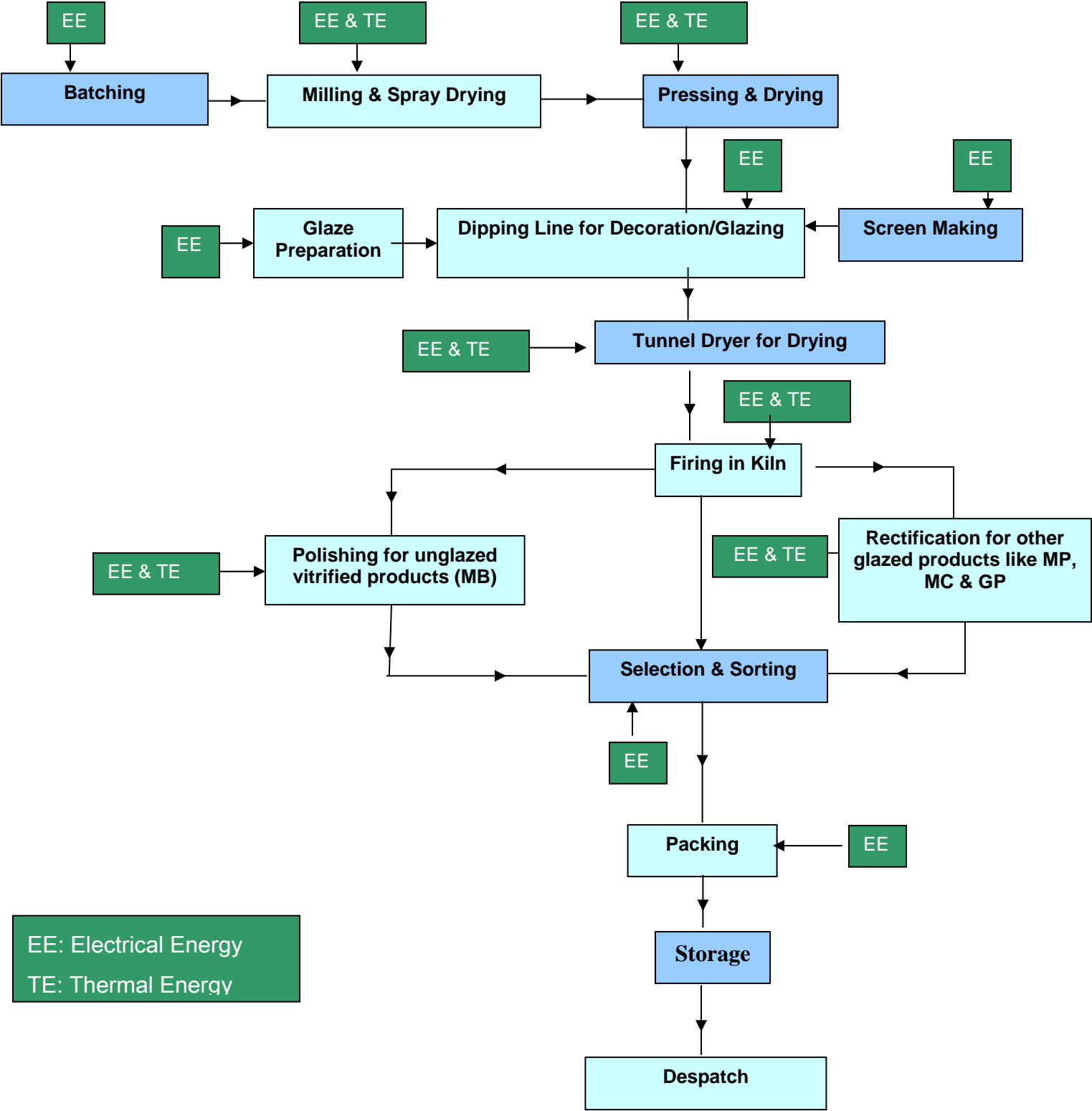
### Company Profile

H & R Johnson (India) LTD, manufacturer of the premium brand of wall, floor, porcelain, vitrified and industrial tiles, is a pioneer in the tile industry in India. H & R Johnson (India) LTD is also India's largest tile manufacturer with a capacity of 342720 TPA. and technologically the most modern tile company in India. H & R Johnson (India) LTD is a member of Johnson International U.K., which has a leading presence in all the continents of the globe. With a leading presence all over the globe for 100 years, the 'Johnson' brand has earned the trust of over four generations with its philosophy of "**Leadership through Innovation**". The company has four manufacturing plants which are in Pen (Maharashtra), Dewas (M.P.), Karaikal (Pondichery) and Kunigal (Karnataka). The company also has joint venture companies in Andhra and Gujarat for manufacturing of ceramic and vitrified tiles.

In our quest for total quality, all our plants have received the prestigious ISO 9001, ISO 14001 and ISO 18001 certificates. The plant at Pen is technologically one of the most modern in the world, producing world-class quality tiles.

Beside its internationally preferred brand Marbonite, an alternative to Italian Marble, the company has introduced India's first joint-free glazed porcelain tiles. Branded as Porselano, these tiles are available in natural marble designs and in popular sizes. Unlike conventional ceramic tiles, the joints between tiles would be virtually invisible and are almost paper thin joints. The company has also launched heavy duty tiles for use in heavy industries and pavements and is marked under the brand name – Endura.

**Process Flow Chart**



## Energy Conservation Commitment, Policy and Set

H & R Johnson (India) Limited, considers energy savings as a multidisciplinary approach and it is one of the core responsibility to the nation and also globally. The company's energy profile consists of electricity' fuel i.e. NG, LPG, PROPANE, LDO, C9, HSD, FO, coal, soyabin, rice husk, groundnut shell and other utilities like water, air, etc. A dedicated energy management department is established for the implementation of energy conservation projects. Budget provisions are made exclusively for such activity. Energy conservation plans, policy and structure are reviewed periodically.

Our Energy Management Department is **ISO: 9001-2000 certified**.

National Technology Day & National Energy Conservation Day is celebrated every year to emphasis on energy conservation and other modern technologies for the betterment of the processes and products. Periodic energy audits are carried out department wise in all the plants as per audit calendar. Regular training to inculcate energy conservation awareness and upgrade the knowledge among the plant people is organized regularly in all the units.

## Energy Management Policy

We shall constantly strive to provide quality products and services to meet & exceed customer's expectations.

Continual improvement, commitment, accountability and teamwork shall be our guiding principles.

## Energy Management Objectives

1. To optimize and reduce energy consumption in specified and identified operational areas.
2. New Energy Conservation projects.

### Energy Consumption

Energy consumption trends for thermal and electrical energy, for the last three years have been shown.

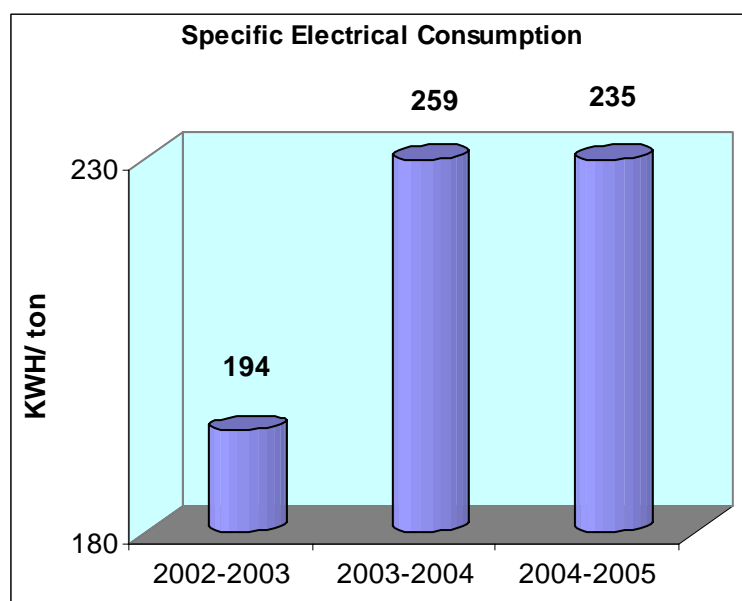
Energy Consumption				
Description	Unit	2002-2003	2003-2004	2004-2005
Production	MT	221577	229888	241965
Electrical Energy Consumption per annum	Lacs Kwh	429	596	569
	Lacs Rs.	2032	2423	2227

Specific Energy Consumption : Electrical	Kwh/Ton	194	259	235
Thermal Consumption per annum	Mkcal	347395	358872	373911
	Lacs Rs.	3894	5002	5748
Specific Energy Consumption : Thermal	Mkcal/ton	1.57	1.56	1.55
Energy Consumption in terms of % manufacturing cost	%	31%	35%	26%

\* The specific energy consumption has been calculated with respect to the equivalent weight of tile as energy consumption changes with the thickness and size of the tile.

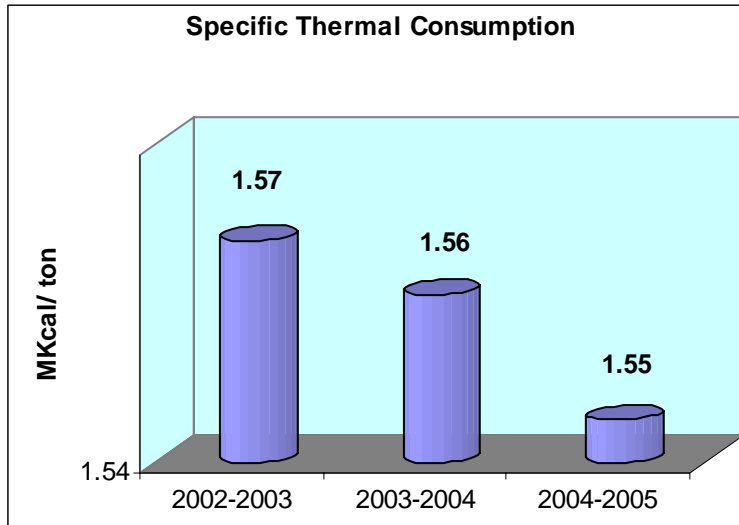
Year	Electricity		Thermal	
	Specific Energy Consumption (Kwh/ton)	% Reduction over 2002-2003	Specific Energy Consumption (Mkcal/ton)	% Reduction over 2002-2003
2002-2003	194		1.57	
2003-2004	259	-33.96	1.56	+0.43
2004-2005	235	-21.53	1.55	+1.44

\*\*The increase in the specific electrical energy consumption in 2003-2004 from the previous year 2002-2003 is due to the production of more value added products (vitrified tiles) like Marbonite and Porselano in that financial year. For the production of these products three highly energy consumptive processes like polishing, rectification and fine milling of the body in the body preparation department are involved. However in the year 2004-2005 it has come down through better energy management.



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For vitrified & porselano product firing cycle and firing temperature are higher compared to traditional product. In spite of that, we have been able to cut down the thermal consumption by more than 0.43% and 1.44% respectively for the year 03-04 & 04-05 with better energy management and control.

## Energy Conservation Achievements

During the year 2002 to 2005, H & R Johnson (India) Limited has implemented energy savings projects through engineering initiatives, team leader suggestions, auditor's proposals. Many cost reduction measures being adopted by the company's management resulting into a total annual savings (2004 – 2005) of Lacs Rs. 194 Lacs.

**Major Projects implemented during 2004-05 are listed below:**

### 1. Co-generation (Pen plant)

The process of manufacturing ceramic tiles requires substantial thermal energy in spray dryers where dry powder is produced from ceramic slurry. For operating three of our spray dryers the total heat requirement is 12.07 Mkal / hr. We have installed a gas turbine (Co-generation system) of 5 MW capacities where the exhaust of the turbine is directly being used inside the spray dryers.

Total Investment	:	Rs. 14 crores
Rated power generation capacity:		5 MW
Average power generation at site condition:		4.3 MW
Turbine Input (NG)		1550 SCM / hr
The average heat		8 Mkal / hr



Generated

Annual expected savings is Rs. 582 Lacs

**GAS TURBINE: 5 MW**

**Note: The system is intermittently operated at part load due to un-availability of NG in adequate quantity. Project was initiated on the basis of policy decision of GAIL to supply NG by early 2005 but it is delayed. Now the required quantity of gas supply is expected by end 2006.**

2. Hot air generator (for spray dryer of Kunigal Plant)

Annual FO consumption 1923 KL  
@ Rs. 15.34 per litre @330 day/year  
Rs. 295 Lacs

**HOT AIR GENERATOR**

Cost of equivalent fuel (ground nut shell) @ 5641 Tons/year @  
Rs. 2.1 per Kg @330 day/year  
Rs. 118 Lacs



**Total Annual Savings is Rs 177 Lacs**

3. Lighting Load Energy Savings System (Pen Plant)

Daily consumption without the savings system (units) 2840 Kwh

Daily consumption with the savings system (units) 2194 Kwh

**Annual savings is Rs. 8.5 Lacs**

**LIGHTING ENERGY SAVER**



4. Flat Belts Installation replacing V Belts (Kunigal Plant)

Power consumption of all drives with V belts 1555 Kwh/day

Power consumption of all drives with Flat belts 1317 Kwh/day

**Annual savings is Rs. 4.76 Lacs**



5. Control Air System for Compressors (Kunigal Plant)

Without ControlAir  
Power Consumption per day 1251 Kwh



With ControlAir  
Power consumption per day 1080 Kwh

**Total Annual savings is Rs. 3.44 Lacs**

**CONTROL AIR SYSTEM**

6. **Cooling Tower Fan Controller (Dewas Plant)**

Total running hrs of cooling  
Tower motors before installation of  
Controllers 24 hrs/day

Total running hrs of cooling  
Tower motors after installation of  
Controllers 16.8 hrs/day

Total running load of all the cooling  
Tower fan motors 5 Kw

**Annual savings is Rs. 0.58 Lacs**



**COOLING TOWER FAN CONTROLLER**

**Major Projects implemented during 2003-04 are listed below:**

1. **Conversion of LDO fired Hot air generator to fluidized bed Hot air Generator (for spray dryer of Dewas plant)**

Annual LDO consumption @ 4320 Ltrs/day  
@ Rs. 21 per litre @350 day/year  
Rs. 317 Lacs

Cost of equivalent fuel (lignite/ground nut shell) @ 12167 Kg/day  
@ Rs. 1.5 per Kg @350 day/year  
Rs. 64 Lacs

**Total Annual Savings is Rs. 253 Lacs**

2. **ControlAir System for Compressors (Pen & Dewas Plant)**

Without ControlAir  
Power Consumption per day 8526 Kwh

With ControlAir  
Power consumption per day 7384 Kwh

**Total Annual savings is Rs.16.67 Lacs**



## CONTROL AIR SYSTEM

3. Reducing the heat losses through exhaust gases i.e. fuel consumption from the vertical dryers (5 Nos.) by optimizing the opening of cold air suction damper

Annual consumption of fuels  
before implementation 15422 MKcal

Annual consumption of fuels  
after implementation 12686 MKcal

Annual savings after by reducing the  
heat loss through exhaust gas 2736 MKcal

Fuel used 100% NG

### Cold air opening in vertical dryer

**Annual savings is Rs. 16 Lacs**



4. Flat Belts Installation replacing V Belts (Pen Plant)

Power consumption of all drives  
with V belts 5299 Kwh/day

Power consumption of all drives  
with Flat belts 4630 Kwh/day

**Annual savings is Rs. 9.97 Lacs**

### Flat



### belts in dust extraction motor

5. Variable Speed Drive Installation in Ball Mill Main Motor (Pen Plant)

Power consumption per batch of  
Grinding without VSD 1250 Kwh

Power consumption per batch of  
Grinding with VSD 1000 Kwh

Energy savings 20 %

No. of batches in 2 days 3

**Annual savings is Rs. 4.93 Lacs**



### VSD in Ball mill

**Major Projects implemented during 2002-03 are listed below:**

1. Replacement of FO firing to producer gas firing in spray dryer (for spray dryer of Dewas Plant)

Annual FO consumption @ 5500 Ltrs/day  
@ Rs. 15.34 per litre @330 day/year  
Rs. 278 Lacs

Cost of coal @ 8250 Kg/day  
@ Rs. 3.77 per Kg @330 day/year

Rs. 103 Lacs

**Annual savings is Rs. 175 Lacs**

*Note: Now producer gas is in use for kilns.*

2. Switching off the fuel fired burners in tunnel dryers and running 100% with waste heat from kiln, through process adjustment (Pen Plant)

Annual consumption of fuels  
In burner operation 2688 MKcal

Annual savings after by switching  
Of the burners 2688 MKcal

Fuels used 50% LPG & 50% NG

**Annual savings is Rs. 37 Lacs**



**TUNNEL DRYER**

3. Compressed Air System Audits (Kunigal Plant)

Actions Taken:

- Removal of the throttling.
- Reduction in the air leakages.
- Provided FRL units at the critical locations.
- Provided air dryers.



**COMPRESSED AIR DISTRIBUTION**

Generated pressure before  
audit implementation 6.4 bar

Generated pressure after audit  
Implementation 5.8 bar

Annual savings 163636 Kwh

**Annual savings is Rs. 9.0 Lacs**

**4. Cooling Tower Fan Controller (Pen Plant)**

Total running hrs of cooling  
Tower motors before installation of  
Controllers 24 hrs/day

Total running hrs of cooling  
Tower motors after installation of  
Controllers 16.8 hrs/day

Total running load of all the cooling  
Tower fan motors 17 Kw

**Annual savings is Rs. 2.0 Lacs**

**COOLING TOWER FAN CONTROLLER**



**5. Installation of Refrigerated Type Air Dryer Replacing Heatless Type Dryer (Kunigal Plant)**

**Annual savings is Rs. 1.6 Lacs**



**Other projects implemented during 2002-2005 are:**

- Installation of automatic power factor correction unit. Annual savings achieved is 66 lacs.
- Timers installed in three press motors of 45 Kw to stop the idle running of them. Annual savings achieved is 14850 kwh i.e. Rs. 62370
- Timers installed in the six stirrers of the slurry tanks to ON/OFF the motors of 15 Kw each, after preset time. Annual savings achieved is 10395 kwh i.e. Rs. 43659
- Timers installed in the 30 Kw four ball mill motors to stop the mill motors running after the specified time. Annual savings achieved is 12473 kwh i.e. Rs. 52390
- Centralised air conditioning system for the complete tool room is replaced by localised air conditioning systems at the required places. Annual savings obtained are Rs. 6 Lacs.

- Covering of hot air ducts of the spray dryers by ceramic blankets to reduce the heat losses. Annual savings achieved is 33 Mkal i.e. Rs. 51000
- Switching off lights, fans, ACs, by individuals wherever offices are not occupied. Annual savings achieved is 23809 kWh i.e. Rs. 100000
- Installation of voltage stabilizer for our plant distribution. This has made has reduced the frequent damages of cards and other electronic component.

## Energy Conservation Plans and Targets

Energy Conservation Measures (Planned)	Anticipated Savings in Energy/year	Anticipated Savings INRL/year	Approximate Investment (Lacs Rs./Year)	Project Commencement and Completion year
Coal Gasifier for roller hearth kilns. (We are trying in our kiln in Dewas. Once it is successful we will implement the same for other kilns in other areas.)	No direct savings in energy	440	200	2005
Gas turbine based Cogeneration – Karaikal	30833 Mkal	300	1100	2006
Indirect hot air generators for vertical dryers	No direct savings in energy	200	90	2006
Replacement of electrically heated LPG vaporizer with fuel fired hot water generator	714285 kWh	30	15	2005
Water Management	3333 KL	10	1	2005

Variable Speed Drives in Fans and Blowers	238095 kWh	10	8	2005
Domestic lighting energy conservation measures	180952 kWh	7.6	4.2	2005
Variable Speed Drives in Ball Mills	142857 kWh	6	6	2006
Supply Side Compressed Air System	106428 kWh	4.47	3.6	2006
Lighting Load Energy Savings System in remaining areas	95238 kWh	4	4	2005
ControlAir System for compressors (Demand side) in remaining areas	41666 kWh	1.75	1.4	2005

All other initiatives like suggestion schemes, training programs, and engineering initiatives will continue. By adopting the above energy conservation measures, H & R Johnson (India) Limited will be able to achieve the set target of reduction of 3% energy bills.

## Environment and Safety

H & R Johnson (India) Limited is committed to the protection of the environment by Prevention of Pollution and continual improvement in Environmental performance. The company has got the certification of ISO 14001. The company works continuously as per the Environmental Policy for:

- Minimisation of generation of waste.
- Conservation of resources.
- Recycling and re-use of waste

The company has installed Effluent Treatment Plant (ETP) in all its plants for processing of solid waste and water generated in the plant for reuse in the process.

For safety, health & environment (SHE) we have formed a task force which comprised of people from every department.

Our company is OSHAS 18001 certified.