



TOGETHER
for a sustainable future

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RECP Experiences at M/s. Somany Ceramics Ltd. Gujarat, India

Achievements at a Glance

Gujarat Cleaner Production Centre (GCPC), Gujarat, India is working with M/s. Somany Ceramics Limited for RECP implementation in Gujarat. RECP refers to the continuous application of preventive environmental strategies and total productivity methods to processes, products and services to increase efficiency and reduce risks to humans and environment. RECP achieves the three sustainability dimensions individually and synergistically: Production Efficiency, Environmental Management and Human Development.

After the RECP implementation, the total investment is USD 15135 (**One time**) and saving was USD 264976 (**Yearly**) with payback period of 21 Days.

The RECP involves the improvement targeting resource efficiency, process improvement, energy efficiency and reduced environment impacts, by employing appropriate technologies, both environment and economic gain as achieved.

Overview

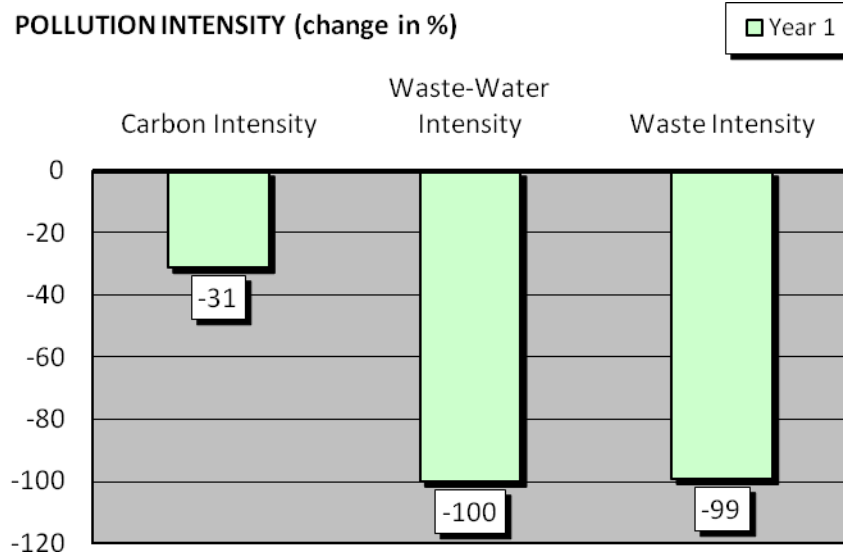
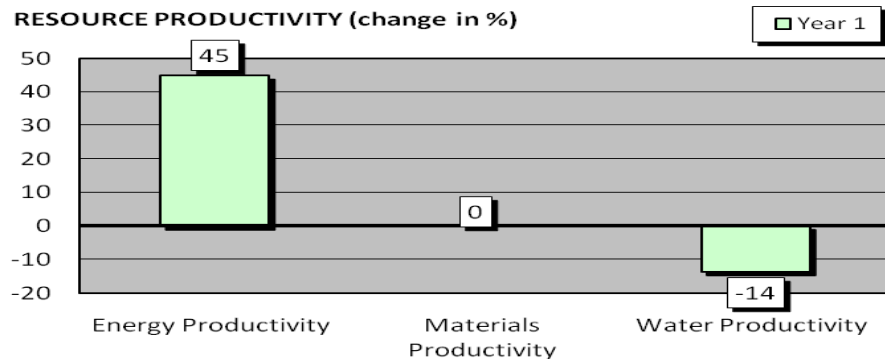
M/s. Somany Ceramics Limited is engaged in manufacturing of Ceramic Glazed wall and Floor tiles. The installed capacity of wall and floor tiles is 18000 SQM of wall and floor tiles per day. The floor tiles manufacturing facility has technological edge over the present technology with single firing facility of tile, higher production capacity and less process loss and recovery of heat. The single firing productivity is higher and it is more energy efficient. The best performance in term of process control is achieved by output of previous process becomes input of next process, so intermediate quality parameters checked for assurance to get finished products with good quality. As an environmental friendly company, there is no wastage discharged outside the plant. All types of 100 % waste is reused in process after recycling. Even effluent treated water is also 100% recycled in process.

Benefits:

- Cost saving through reduced wastage of both energy and materials
- Performed cost saving on End-of-Pipe waste treatment
- Improved operating efficiency of the plant
- Increased product quality and consistency
- Recovered waste materials
- Improved the work environment (Health and Safety of the workers)
- Improved capacity of ceramic industrial floor personnel
- Developed new and improved market opportunities through waste exchange

ABSOLUTE RECP INDICATORS					
Indicator	Unit	Baseline (B) (Before RECP intervention)	Year 1 A (After RECP implementation)	Change (C) $C=100*(A-B)/B$ [%]	Difference Between A and B
Resource use					
Energy Use	[kWh/yr]	130,380,720.00	95,368,114.00	-26.85	-35,012,606.00
Materials Use	[ton/yr]			0.00	0.00
Water Use	[m3/yr]	105,500,000.00	129,332,000.00	22.59	23,832,000.00
Pollution					
Carbon dioxide	[ton CO ₂ -eq/yr]	26,329.58	19,259.00	-26.85	-7,070.58
Waste-Water	[m3/yr]	31,185.00	1.00	-100.00	-31,184.00
Waste	[ton/yr]	120.00	1.00	-99.17	-119.00
Product Output					
Product Output: P	[ton/yr]	94,500.00	100,139.00	5.97	5,639.00

Results at a glance



Success Areas

The results were achieved through the implementation of the following measures:


- Defined and reduced all types of losses in every process
- Waste plastic containers and used oil sell to registered Re- Processors & Recyclers.
- Installation of sub energy & fuel meters with respect to quantity centre
- Precise and perfect management by right input for quantifying production and losses
- Reduced losses in: washing loss at spray dryer, dust loss, green pitchers at press and glazing section
- Used rubber tire in low in cost and used as seal at ball mill lead to avoid leakage during grinding
- Reduction in bad printed tiles by optimization in speed of machine
- Periodic maintenance report of strapping machine at packaging area to avoid strap loss.
- Plastic covers are provided while loading material to ball mill to reduce spillage.
- Press charging system is modified by limiting movement of filter to the charger to avoid spillage.
- To avoid formation of lumps and bigger size granules from dust in silos during ageing due to % of moisture, temperature and humidity, online roller grinding system is designed in house to eliminate this loss at vibro shieve at press.
- Store department has made break up in issuing raw material & spare parts Q/C wise instead of whole process wise (Department wise)
- Dust collector efficiency improved to collect flying dust recovers for reuse.
- Reusing 100 % treated water from effluent treatment plant in wet grinding of body material in Ball Milling.
- Reusing 100 % sludge generated from Effluent Treatment Plant in body preparation.
- Installation of hydro filter unit to collect flying dry glaze particles during application.
- Installation of Pulse jet dust collectors unit for collecting flying dust near press and dry sizing and chamfering area.
- Installation of Cyclone and wet scrubber unit to control fine dust escape from chimney of spray dryers.

Resource Efficient and Cleaner Production (RECP)

Resource Efficient and Cleaner Production (RECP) entails the continuous application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment.

RECP addresses three sustainability dimensions individually and synergistically:

- *Production efficiency*
 - > Through improved productive use of natural resources by enterprises
- *Environmental management*
 - > Through minimization of the impact on nature by enterprises
- *Human development*
 - > Through reduction of risks to people and communities from enterprises and supporting their development



The diagram features the acronym 'RECP' in the center, surrounded by four icons: a balance scale (top left), a water drop (top right), a factory (bottom right), and a recycling symbol (bottom left). The words 'Resource Efficient' are written in an arc above the icons, and 'Cleaner Production' is written in an arc below them.

Table 2: Options implemented

Principal Options Implemented	Benefits			
	Economic		Resource Use	Pollution generated
	Investment [USD]	Cost Saving [USD/yr]	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
De- flocculants consumption Cost reduced by modifying body composition from 7 Clays to 4 clays	Nil	104616.316 USD	Material consumption reduced from 11.3 Kg/MT to 9.5 Kg/MT	Reduction in raw material consumption
Glaze Scrubbed from wall tiles GGP, used as engobe for floor tiles	1513.546 USD	21401.544 USD	Material saved: DFF : 40.6 ton & FTP :24.95	Reduction in waste
On line Roller Grinding Machine Designed and installed to control Glost Pitcher Loss and Quality Loss	12108.369 USD	44649.614 USD		Reduction in waste
Minor Bad Print Green tiles earlier Scrap and sent to reprocess, but after knowing the Recycle cost, six times higher than Input raw material,	Nil	16936.582 USD	GGP reduced from 3.43% to 2.81%	

now it is sent to final firing application and get reprocess cost saved.				
Cumulative action for One line Big Granule Grinding system, controlling GGP and Spillage of Dust material	1513.546 USD	77372.4837 USD		

Approach taken

The overall objective of the programme is to facilitate promotion of Resource Efficient and Cleaner Production without entailing excessive cost in ceramic industry so as to strengthen environmental management and pollution control in the industry. Cleaner production methodology was taken as an approach for this project which includes List Process Steps, Identify Wasteful Processes, Process Flowchart, Material and Energy Balance, Identify Cause of Waste, Technical-Financial- Environmental Feasibility, Implementation of Cleaner Production Solution etc.

Business case

Resource Efficient and Cleaner Production means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and where that is not practicable, to reduce emissions and the impact on the environment as a whole.

Testimony Box
<p>Gujarat Cleaner Production Centre (GCPC), Gujarat, India</p>
<p>The Gujarat Cleaner Production Centre (GCPC) has been established by Industries & Mines Department, Govt. of Gujarat under Gujarat Industrial Development Corporation (GIDC) in the year 1998 with technical guidance of UNIDO and since then the centre is actively engaged in the promotion of Cleaner Production (CP)/Clean Technology (CT) through its various activities such as orientation/awareness programmes, CP and CT Assessment Projects etc.</p> <p>Contributions of GCPC over the years towards promotion of Cleaner Production in the state of Gujarat to improve the productivity and the environmental problems faced by SMEs have been significant. GCPC had also played active role in framing Industrial Policy 2004, 2009 and 2015, also supported in developing many financial assistance schemes pertaining to CP/CT. GCPC is also member of RECP of UNIDO and Climate Technology Centre and Network (CTCN), a working arm of UNFCCC.</p> <p>GCPC have so far conducted more than 200 Orientation Programmes in different colleges, organizations and industries associations. The centre has successfully completed more than 100 CP Demonstration Projects in various sectors like Textile, Dairy, Pulp & Paper, Chemical, Petrochemical, Pharmaceutical, Fish Processing, Ceramic etc.</p>
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English Abstract (where applicable)
<p>N/A</p>