

CII National Award for Environmental Best Practices Award– 2023

Welcome

Team Members:

Mr. Raju Sharma (SH-Process)- Presenter
 Dr. Sandeep Mishra (SH –Environment)
 Mr. Abdul Basit (SH-Tech. Cell)

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Kiln Productivity & Efficiency Enhancement by De-bottlenecking the Loop duct (Calcliner) & Hence reduction in plant specific CO2 emission.

Trigger Point:

At Hirmi which is one of the 02 clinker Unit in East cluster, we took up a detailed project of Kiln system analysis to solve the chronic & major problem that the unit was facing after Calcliner modifications done in Jan'18. OEM had left this issue stating that it was a design failure after several small modifications. The issue caused the Kiln TPD to be restricted to mx. 7500, frequent surging leading to higher sp. energy consumption of around 740 Kcal/kg.clk. & 65.0 units clk. power & poor reliability. After successful modifications in Sept'20 the Plant performance was improved leading to several KPI milestones. And at all level of management of UTCL project was conceived and praised.

Uniqueness of the project: Calcliner Loop duct modification was done first time in the history of UTCL ever

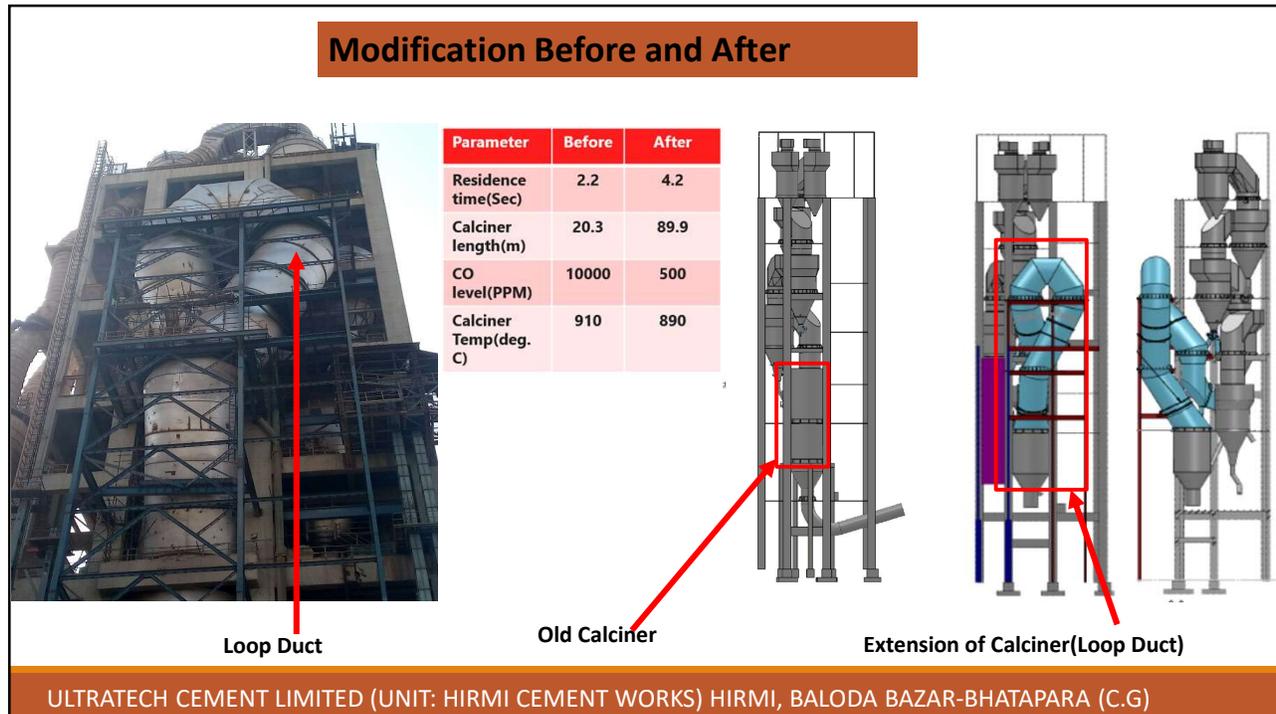
Commencement & completion of project:

Initially project was considered and working started in the Jan 2018 but OEM has left the job after several modification stating that it was a design failure. But project we have never loose the hope and after Several modifications we have achieved the targeted by sept 2020.

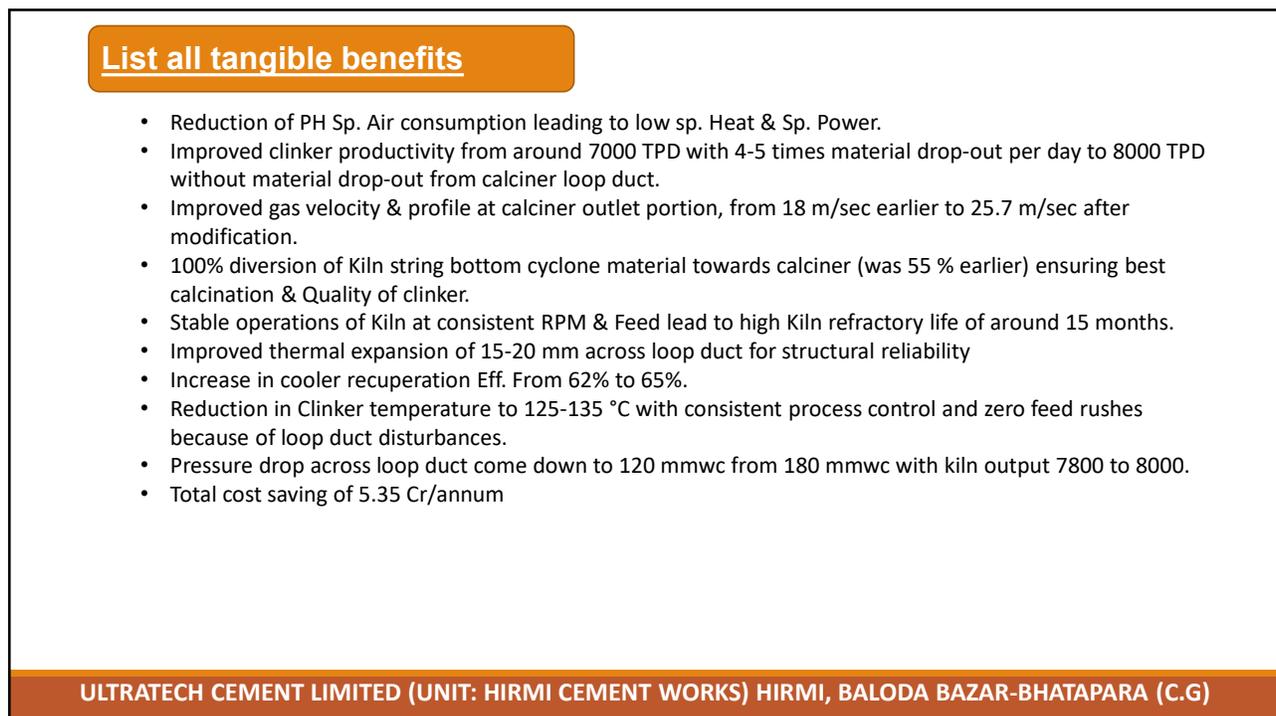
Major milestones of project accomplishment: Kiln output increase 7500 to 8000 TPD
 Total cost saving of 5.35 Cr/annum

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List Intangible Benefits

- **People/society benefits:** Eliminate fugitive emission due to dropping materials from loop duct.
- **Moral /motivation:** Employee moral is increases due to smooth operation after modification.
- **Skill upgradation:** Capability building development in difficult scenario of employee.
- **Attitude shift/development :** Confidence improvement after successful modification.
- **Others:** Reduced our total specific CO2 emission by around 20 KgCo2/mt clinker after modification.

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Replication potential

- Replication potential and progress of project assimilation cross functional / within group companies:
Yes this project can be replicated to other cement plants also and Same has been implemented successfully in our sister concern Birla White Jodhpur .
- Evidence on where and when implemented with photos before/after:
Photographs of our sister concern Birla White Jodhpur where replication has done in FY-22-23.
- What next for spreading benefits?
Awareness session and seminars in different forum.



Photographs Showing loop duct modification before and after Birla White

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Replication potential of project within sector

- **Steps initiated:** It has been implemented successfully in our sister concern Birla White Jodhpur.
- **Achievement sharing mode :** Seminars conducted inhouse forum and others.
- **Other knowledge sharing platforms:** ABG Stride Award (Within Aditya Birla Group)

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List Challenges faced and brief on countering

- **Technical:** After few months of this modification we have started facing problem of mat. Fall through from loop duct at 7500 TPD production due to which we have to handle daily around 200 to 400 mt of red-hot material having temp of 900 degc which was really a big challenge for us apart from this we were also losing our daily production as well as electrical and thermal energy consumption which was also hampering our clinker & cement despatches.
- **Administrative:** Encouraging the morale of the employees in the difficult situation was a great challenge.
- **Maintenance relate:** Space constraint was there, by considering the environmental impact due to fugitive emission management has taken to do the modification in COVID 19 phase-I to gets sufficient manpower was a great challenge also.

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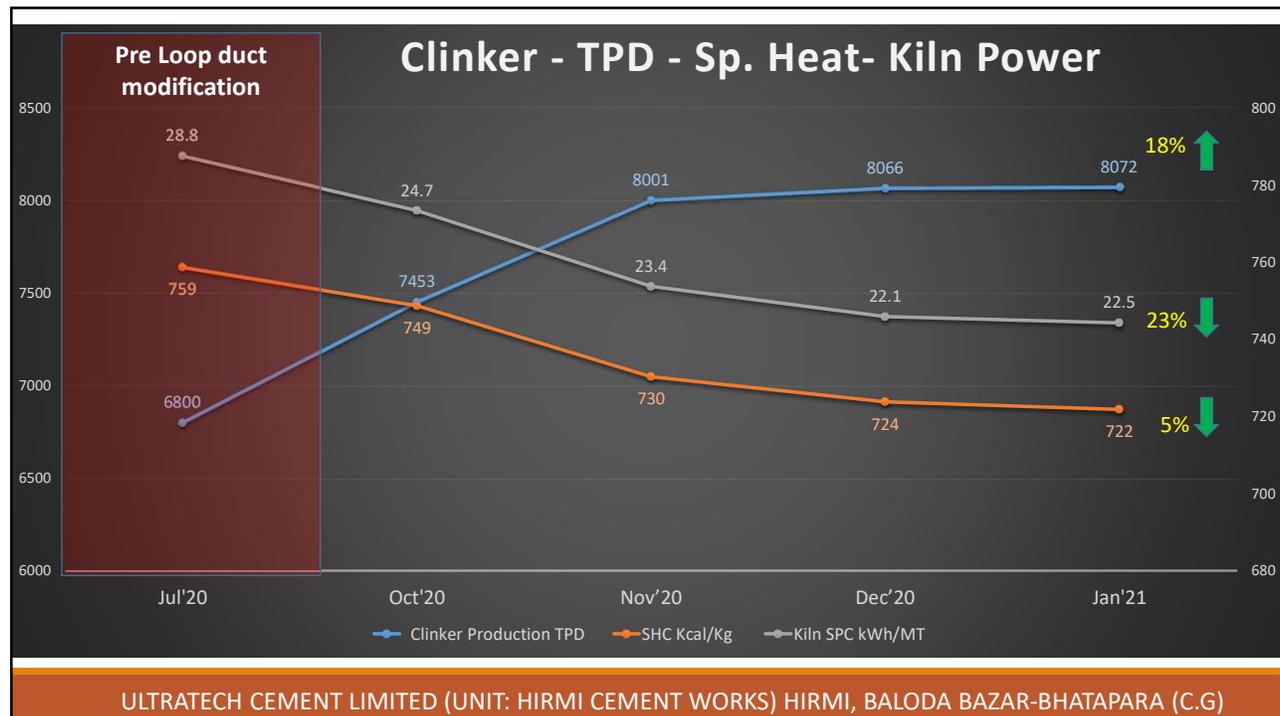
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Achieving national benchmarks/Standards

- Environment parameter: energy/water/carbon/toxicity and emission
 - Energy : Specific Energy consumption: Power consumption reduced by 23% and heat by 5%.
 - Water: 2 KL per day water saving.
 - CO: Reduced from 10000 ppm to 500 ppm.
 - Emission : Fugitive dust elimination:
- Comparison on Men/Material/Methods/Technology/ Measurement.
 - Men: Reduction in manpower hours: 13 lacs hours.
 - Material: Re-handling elimination.
 - Method: Brainstorming/CFD study
 - Technology : As per FLS .
 - Measurement: OEM FLS,TPMC, Unit- Process and Project team.

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Priority plans on fast track for +1 year and +2 year, including resource requirement

In Phase –I, after stakeholder engagement OEM FLS, TPMC, Unit Process and Project Team, we have done comprehensive study on man machine and material requirement. After feasibility study in phase –I, we have executed the project successfully in August- Sept 2020

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Top ten best practices which will form the core of approach for +1 and +2 year

1. Online sensor for monitoring of expansion joints.
2. Loop duct pressure and temp. transmitter installed in all bend, all around periphery.
3. Live monitoring through CCR.
4. Emission Monitoring
5. Housekeeping
6. Regular maintenance of joint and bends.
7. Wastage reduction by control in refractory damage.
8. User friendly system.

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Major learnings from the project implementation

Time Management: We executed this project in Pandemic COVID 19 in time with taking all precaution.

Manpower : We executed this project in Pandemic COVID 19 by ensuring the health and safety of employees as well as workmen.

Acceptance of failure: In phase -1, we have not obtained desired result but OEM,TPMC, Unit Process and project team has continued working on this project and finally achieved desired production in Sept.2020.

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