



NCB NEWS

September 2020



Ballabgarh-Head Office



Hyderabad-Unit



Ahmedabad-Unit



Bhubaneswar-Project Office

HEADLINES

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- **Workshop on AFR**
- **Interaction with cement companies**
 - M/s DCBL
 - M/s J K Cement
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- **Important days celebrated at NCB**
 - 74th Independence day
 - Hindi Pakhwada

Editor: Sh Saurabh Bhatnagar
Ms Richa Mazumdar
Designed by: Sh Imtiaz Khan

From the desk of Director General

Dear Readers,

It has been a little more than a month since our 74th Independence day has gone by. However, I'd like to greet all of you for this day when we gratefully remember our freedom fighters and martyrs whose sacrifices have enabled us to live in an independent nation. NCB family also thanks our defence forces & support staff for preserving our republic and independence allowing countrymen to live in quim, reaping the just rewards of their honest toils.

Today, our country as well as the whole world is confronting the twin crisis of COVID-19 and Climate Change. COVID-19 has disrupted all activities, caused untold damage to the economy and taken a huge toll, especially on the lives of the poor and daily-wage earners. The cement sector is not left untouched. It is estimated that overall in this financial year, there can be a cement demand contraction of up to 15-20%. It is expected that such uncertainty in demand will certainly lead to changes in cement prices, accordingly.

Infrastructure is the key driver for industrial and commercial growth which in turn triggers growth in housing sector. In our country, cement demand is highest in the residential sector and the growth rate is highest in infrastructure. It is expected that the road and railways sector will help in increasing the demand for cement in near future as Government announces more infrastructure projects.

The pandemic has given a rude jolt but also taught us lesson for lifetime. We must strive to achieve economic sustainability. For doing so, we must embrace new and innovative technologies. The industry is at the crossroads and at this crucial juncture should introspect on ways and means to address technical and commercial challenges it faces or is likely to face in near future. Adopting Alternative Fuels and substituting coal to fire the cement kilns is one such challenge. The industry can play an important role in reducing India's industrial environmental footprint, as the best incinerator for industrial waste.

Today, as the twin crisis questions the very existence of us and our businesses, the industry must end its reliance on polluting, financially volatile and costly fossil fuels and instead invest in technologies which provide economic resilience. Investment in renewable energy and energy efficient technologies will not only help in reducing carbon footprint but also pave the way for increase in jobs. In a nutshell, de-carbonising the economy will check Climate Change and create of more jobs.

Through this newsletter I request knowledge innovators, entrepreneurs and business leaders to direct their business as well as spearhead programmes which progressively phase out fossil fuel usage and help us achieve carbon neutrality well before 2050.

In this edition of NCB News, I'd like to share with you, highlights of select on-going and completed research projects. We've recently carried out important workshops on AFR, energy saving measures in cement industry and the art of asset management in cement plants. Excerpts of recently concluded important meetings of IDC and AFC along with interactions with BIS and cement plants are also shared. The Newsletter covers deliberations carried out by 6 out of the 22 expertise groups formed to find solutions to specific tasks, activities at different NCB units, our interaction with academia, list of latest patents acquired and papers published in journals of repute.

I look forward to receive your comments and sincerely hope that you find this edition of NCB e-news quite interesting. Wishing you all happy, healthy and innovative future!



Dr. B N MOHAPATRA

NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS

(Under the Administrative Control of Ministry of Commerce & Industry, Govt. of India)

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To set high standards of fundamental research and provide technical support services to its clients in India & abroad, NCB has started following activities regularly carried out by similar R&D institutes in the field of cement and concrete in different countries like:

- Turkish Cement Manufacture Association, Turkey
- LafargeHolcim R&D Centre, Lyon, France
- École Polytechnique Fédérale de Lausanne, Switzerland
- CEMEX Research Group, Switzerland
- Verein Deutscher Zementwerke e.v., Germany
- Heidelberg Cement Group, Germany
- China Building Materials Academy, China
- Institute of Construction Science, Spain
- Portland Cement Association, USA
- FLSmidth & Co. A/S Copenhagen, Denmark.



Being a pivotal research and development institution and knowledge bank for the cement and concrete sector in India, NCB assesses its knowledge & infrastructural prowess vis-à-vis present global benchmarks set by institutes working in similar field and works towards bettering the set benchmarks.

PATENT ACQUIRED AND PAPERS PUBLISHED

Patent Granted:

1. Ordinary Portland clinker for lowering clinkerization temperature and improving clinker characteristics (*Patent No. 344069*), contributed by Sh Ashwani Pahuja, Dr. M M Ali, Dr. V P Chatterjee, Dr. S K chaturvedi, Sh S K Agarwal.
2. Fast process for determining expected 28-days compressive strength of concrete made with Portland pozzolan cement (*Patent No. 344307*), contributed by Sh V V Arora, Sh Suresh Kumar, Sh Manish Kumar Mandre.

Research Papers Contributed:

1. “*Effect of Minor Mineral Additions on the Mechanical Properties of PPC*”, S K Agarwal, S K Chaturvedi, B N Mohapatra, International Cement Review, Apr’ 20, p. 91-102.
2. “*Optimization and Evaluation of Ultra High Performance Concrete*”, P N Ojha, Piyush Mittal, Abhishek Singh, Brijesh Singh and V V Arora, Asian Concrete Federation Journal, 30 Jun’20.
3. “*Analysis of Stress Block Parameters for High Strength Concrete*”, Brijesh Singh, Vikas Patel, P N Ojha & V.V Arora, Asian Concrete Federation Journal, 30 Jun’ 20.
4. “*Evaluation of Modulus of Elasticity for Normal and High Strength Concrete with Granite and Calc-Granulite Aggregate*”, V V Arora, Brijesh Singh, Vikas Patel & Amit Trivedi, FIB Structural Concrete Journal, published online on 16 July’ 20.
5. “*Process & quality optimisation in cement plant- Part 1*”, B N Mohapatra, Indian Cement Review, Jul’20.
6. “*Process & quality optimisation in cement plant- Part 2*”, B N Mohapatra, Indian Cement Review, Aug’20.
7. “*Value added product, classified fly ash*”, Mayur Pathak & B N Mohapatra, Indian Cement Review, Sept’ 20.
8. “*Material Properties Investigation and Finite Element Analysis of Idukki Dam in India*”, Brijesh Singh, P N Ojha, V V Arora, Pramod Narayan & Bikram K Patra, Dam Engineering Journal Volume XXXI Issue-1, Sep’ 20.
9. “*A review on development of Portland Limestone Cement: A step towards low carbon economy for Indian Cement Industry*”, Sandeep Gupta, B N Mohapatra, Megha Bansal, Current Research in Green and Sustainable Chemistry, Sept’ 20.
10. “*Case Studies on Laboratory Evaluation and Repair of Concrete Dams In Himalayan Regions of India Using High Performance Concrete*”, P N Ojha, Suresh Kumar, Brijesh Singh and B N Mohapatra, Dam Engineering Journal, Volume XXX Issue-4, 2020.

INTERACTION WITH ACADEMIA

MOU’S WITH EDUCATIONAL INSTITUTES

NCB is working on entering into MoUs with various prestigious educational institutes of India like IIT-Roorkee & Bhubneswar, 7 NITs, Dayalbagh University-Agra and BITS Pilani which aims for: Facilitation of internship/ training for students, sharing facilities like laboratory, library, proprietary software & in house developed components, exchange ideas and manpower to enhance R&D activities, explore possibility of conducting joint seminars / workshops explore opportunities for securing funding for joint research projects.

POST GRADUATE DIPLOMA IN CEMENT TECHNOLOGY

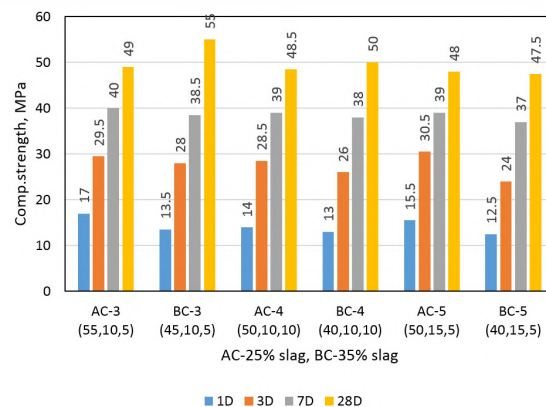
NCB is glad to inform that 14 candidates have been selected for the course of PGD in Cement Technology. which will prepare candidates to cope with challenges, cement industry shall present to them in future.

Investigations on Multi-component Blended Cement using Portland clinker, limestone/dolomitic limestone, fly ash, GBFS & other mineral additives

Portland cement production has shown unprecedented worldwide growth, estimated to be 4.8 billion tons by 2030 and 6.0 billion tons by 2050 from current production level of about 4.2 billion tons annually, due to the rise in population and increasing infrastructural requirements, thus causing the threat of conserving natural resources used in cement manufacture, along with carbon and energy footprints owing to calcination of limestone and burning of fossil fuels. In view of recognizing the need to mitigate carbon and energy imprint during cement production, clinker substitution where a part of Portland clinker is substituted by cementing materials, such as GBFS, fly ash, limestone, silica fume etc., without increasing the production of basic clinker could be an effective approach adopted by entire global cement industry to achieve environmental sustainability, which identified to reduce CO₂ emission by about 37%, in comparison to other prevalent low carbon technologies, such as efficient kiln technology, use of Alternate Fuel and Raw materials (AFR), Waste Heat Recovery (WHR), Carbon Capture, Storage and Use (CCS/U). Presently, Bureau of Indian Standards permits the use of binary cements: (i) Portland Pozzolana Cement (PPC) with 15-35% fly ash and (ii) Portland Slag Cement (PSC) with 25-70% GBFS and ternary cement system (iii) Composite Cement with simultaneous use of 35-65% Portland clinker, 15-35% fly ash and 20-50% GBFS for commercial applications in India. Fly ash and GBFS are the most proven blending materials worldwide in manufacture of cement, but in view of scarcity of these materials, in near future, there is a need to explore other alternative source of cementing materials such as low grade and dolomitic limestone, which are lying unutilized due to chemical, mineralogical, and granulometric incompatibilities, to broaden the raw materials base in manufacture of blended cements.

In view of above, a study was undertaken on quaternary cement system containing Portland clinker (conforming to the requirements of IS: 16353-2015)-fly ash (IS:3812-2013)- GBFS (IS:12089-1987)-cement grade limestone/dolomitic limestone for gainful utilization of unused materials. Different quaternary cement blends were prepared with material proportioning; 40-60 wt.% Portland clinker, 5-20 wt.% fly ash, 25 and 35 wt.% GBFS, 5 and 10 wt.% cement grade/dolomitic limestone, maintaining clinker to cement ratios at 0.60, 0.55, 0.50, 0.45, 0.40, 0.35 and 0.30, by inter-grinding of all constituents in laboratory ball mill, maintaining Blaine's fineness at 370±10m²/kg. Evaluation of physical characteristics of above quaternary cement blends showed:

- Comparable water demand to prepare cement paste of normal consistency in case of cement grade as well as dolomitic limestone with either 25 wt.% or 35 wt.% GBFS.
- Shortening in setting times with reduction in clinker to cement ratios.
- Compressive strength of cement mortars containing 25 wt.% GBFS showed substantial reduction in strength, particularly at early ages with addition of dolomitic limestone in comparison to cement grade limestone, whereas cement blends prepared with 35 wt.% GBFS showed marginally improved strength in case of dolomitic limestone at all curing ages in comparison to cement grade limestone.
- Quaternary cement blends prepared with 35 wt.% GBFS showed adequate strength development of cement mortars with clinker to cement ratios as low as 0.40.
- Therefore, quaternary cement system consisting of Portland clinker, GBFS, fly ash, cement grade as well as dolomitic limestone showed adequate strength development and could be a future cement composition to further bring down clinker to cement ratio.



Effect of slag content on compressive strength of cement blends
(25 wt.% vis-à-vis 35 wt.% GBFS)

In the last edition of Newsletter, we gave an insight on three out of twelve new R&D projects approved by the 72nd Research Advisory Committee of NCB. In this edition, we would like to update you with the current status of research in selected ongoing as well as new projects, being carried out by our engineers and scientists in the field of cement and concrete.

Fresh Hardened and Durability Performance Evaluation of Concrete made with Portland Limestone Cement (PLC)

In view of the scarcity of cement grade limestone in near future, and due to availability of low and dolomitic grade limestone deposits lying unutilised at mines in India, NCB took up a comprehensive study on Portland Limestone Cement (PLC). European standard EN-197-1 permits use of max. 35% limestone in manufacture of PLC. At present, PLC is not used in India and BIS has not formulated standard specifications for it. However, its utilization will help in mitigation of environmental pollution and conservation of good quality raw materials, required for cement manufacture, through lowering of clinker factor. NCB has taken up the studies to investigate the feasibility of using different grades limestone in development of PLC and formulate new Indian standard for its commercialization along with lowering of clinker factor in cement. The project envisages to study the hardened and durability properties made with PLC. PLC is cement prepared by inter grinding OPC clinker, limestone and gypsum. For the very purpose of OPC clinker, different grades of limestone and gypsum were procured from five different regions of India (see Table 1). PLC samples of 5, 10, 15, 20, 25 and 30 % replacement with different limestone grades were prepared. A total of 80 nos. of PLC blends were prepared and their physical and chemical characteristics have been determined. Based on this study, PLCs prepared with 15% replacement were finalized for studying the fresh, hardened, durability and microstructural study.

Table 1 Details of Cement Plant from which OPC clinker and limestone was procured

Zone	Raw Materials Procured
East Zone	Clinker, Cement Grade (CG) and Marginal Grade (MG) limestone, gypsum
West Zone	Clinker, Cement Grade (CG) limestone, gypsum
North Zone 1	Clinker, Cement Grade (CG), Low Grade (LG), and Dolomitic Grade (DLS) Limestone, gypsum
North Zone 2	Clinker, Cement Grade (CG), Low Grade (LG) and Dolomitic Grade (DLS) Limestone, gypsum
South Zone	Clinker, High Grade (HG) and Marginal Grade (MG), gypsum

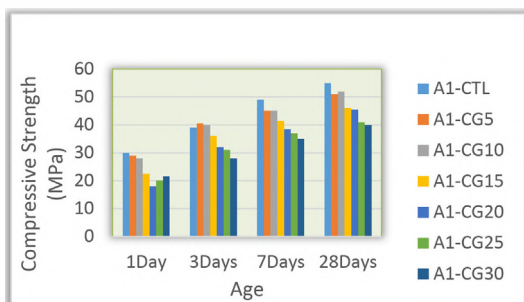


Fig. 1: PLC Blends with Cement Grade Limestone

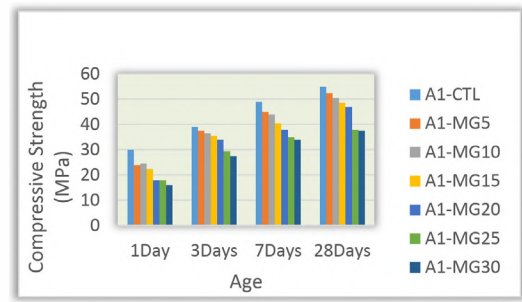


Fig. 2: PLC Blends with Marginal Grade Limestone

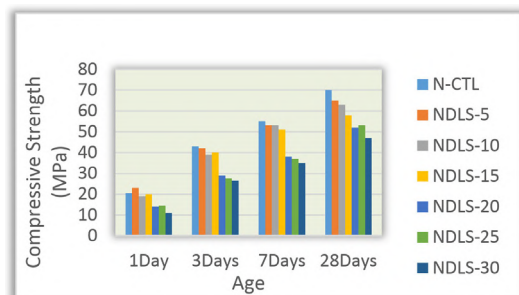


Fig. 3: PLC Blends with Dolomitic Limestone

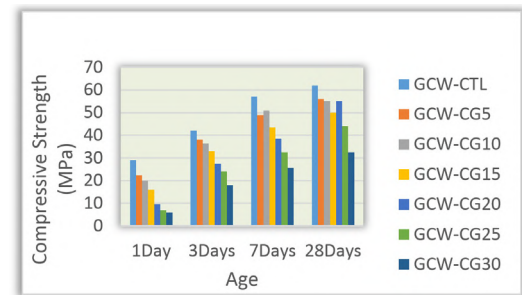


Fig. 4: PLC Blends with Cement Grade Limestone

Figures 1 to 4: Compressive strength of mortars prepared with PLC blends using different clinker and limestone types from different cement production zones of country

A total of 9 cements have been prepared out of which 1 correspond to Control Cement (*OPC*) and 2 each to low, marginal, dolomitic and Cement Grade Limestone.

The following tests are being carried out on concrete made with 2 different w/c ratios of 0.4 & 0.6

- Fresh concrete properties i.e. Air content, Bleeding, IST, FST, Workability, pH etc.
- Hardened properties: compressive strength, flexural strength, MOE and Poisson ratio, drying shrinkage,
- Durability Tests: Accelerated Carbonation Test, RCPT test, Chloride Diffusion Test, Abrasion Resistance Test, Water Permeability Test and Sorptivity Test etc.

Most of the durability tests have been completed while few are awaited. The final project report will be completed by end of August 2021.

Blended/ Composite cements so far have stood the test of time and are found to offer significant performance advantages along with environmental mitigation in terms of reduced emission, natural resource conservation and waste utilization. In India, only PPC, PSC and recently composite cement are being produced commercially. However, producing Portland Limestone Cement using different grades of limestone is the need of the hour as large deposits are existing in our country and are not being adequately utilized.

Development of Portland Composite Cements based on flyash and limestone

Low carbon cement production is the need of the hour as well as highly encouraged in the present scenario. Blended cement manufacture is an effective step towards lowering the carbon emission. Composite cement manufacture presently utilizes flyash conforming to IS 3812 (*Part 1*): 2013 and Granulated Blast Furnace Slag (*GBFS*) conforming to IS 12089: 2018. However, manufacture of composite cement is not much due to the lesser availability of GBFS in our country and also because of its utilization in PSC production. On the other hand, fly ash and limestone are available throughout the country and thus, can be used in composite cement manufacture.

EN 197-1 specifies the limestone based cements such as PLCs developed with maximum percentage of limestone 20 and 35% in CEM IIA-LL and CEM II B-LL respectively. The use of limestone and fly ash simultaneously in manufacture of cement is not employed presently. Limestone and fly ash based composite cements are well known and well researched abroad. BIS, presently, has not come up with a standard for limestone and fly ash based Portland Composite Cement. This project is taken up by NCB with an objective to utilize limestone and fly ash simultaneously in the manufacture of composite cements.

The raw materials, clinker, fly ash and limestone used in the study were collected from four different regions of the country. In the present study, the physical performance of the Portland Pozzolana Cement (*PPC*) and Portland Composite Cements (*PCC*) were carried out upto 56 days as per relevant Indian standard. Various blends were prepared with 15-35% of fly ash and 5-10% of limestone. The limestone used in the study were cement grade, low grade as well as dolomitic grade. The performance characteristics of the various blends were being carried out.

The performance results indicated that in all composite cement blends prepared, adequate compressive strengths were achieved at low as well as at high clinker replacement levels. The compressive strength data revealed that even with 35-40% replacement of clinker with fly ash and limestone the 28 day compressive strength was around 45 MPa. The 28 day compressive strength of PPC was around 55 MPa. The quality of clinker plays an important role in the composite cement strength characteristics. Figure 1 shows the effect of varying fly ash content with fixed limestone content in composite cement samples.

The effect of varying the fly ash content from 15-30% in the composite cements at fixed limestone content of 5, 7 and 10% was studied. The obtained results are graphically plotted in Fig 4. It was observed that as the addition of fly ash in the composite cement blends increases, the strength goes on decreasing. The addition of 10% limestone results in decrease in compressive strength values compared to the PPC sample of equivalent clinker replacement, however, with 5 and 7% limestone addition the strength values are comparable with PPC samples.

HIGHLIGHTS OF ONGOING RESEARCH PROJECTS

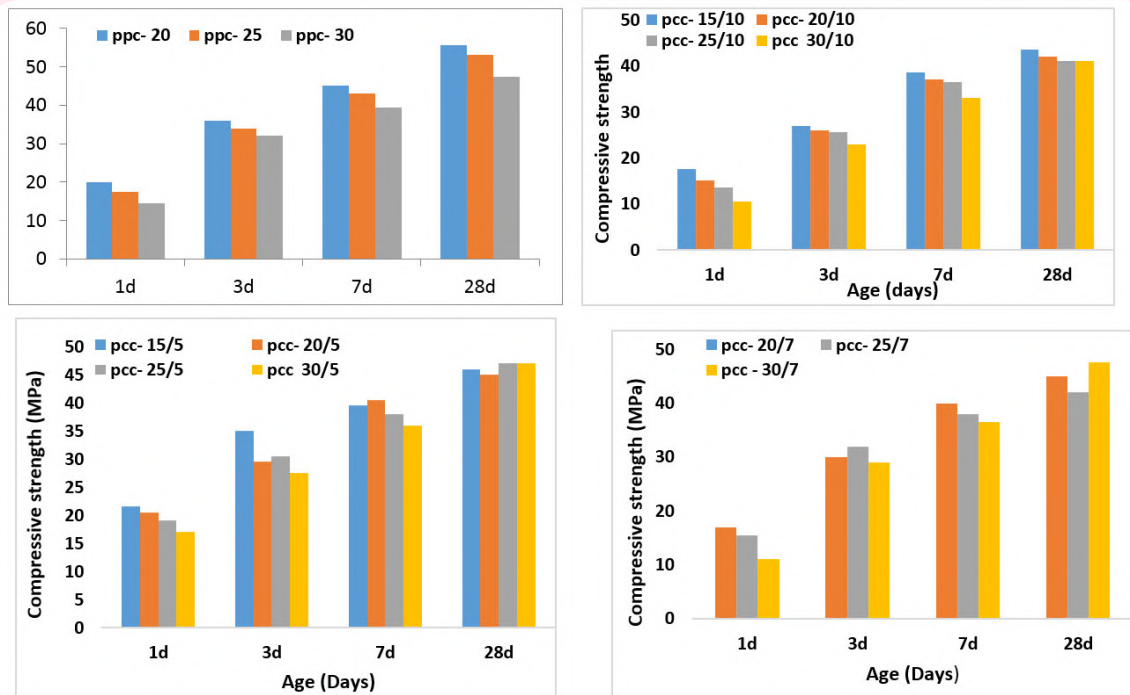


Fig. 1: Compressive strength of PPC compared with composite cement with 5, 7 & 10% limestone and varying fly ash contents

Manufacture of limestone and fly ash based composite cements will reduce the impact of CO₂ on environment, utilization of industrial wastes and enable production of cements with lower clinker factor leading to resource conservation, enhanced waste utilization and greater sustainability in cement manufacture. To facilitate manufacture and use of limestone and fly ash based composite cements in India, it is required to formulate the standards. Further work carried out under the project will be helpful towards formulation of national standards on limestone and fly ash based composite cements.

“Investigation for Standardization of High MgO Clinker for Blended Cement”

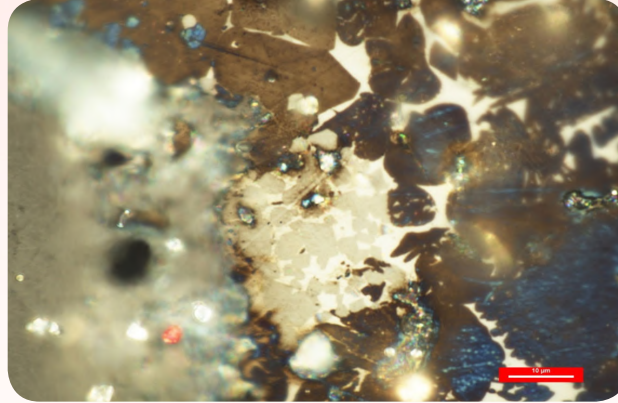
The objective of this study is to investigate clinker characterization with MgO content up-to 8% for the manufacturing of blended cements, such as PPC and PSC to utilize high MgO content low grade limestone for clinker manufacturing. Four types of high MgO clinker samples from different industries named as Clinker-1 (MgO~6.16%), Clinker-2 (MgO~6.80%), Clinker-3 (MgO~7.50%) and Clinker-4 (MgO~8.40%) on the basis of MgO content were procured along with other cementitious and additive samples such as fly ash, GBFS and gypsum. Chemical and mineralogical characterization of the above procured samples were studied. OPC, PPC and PSC cement samples were prepared by intergrinding the constituents in a laboratory ball mill utilizing Clinker -1 (CL-1), Clinker-2 (CL-2), Clinker-3 (CL-3) and Clinker-4 (CL-4) respectively keeping the fineness level 350±10 m²/kg. PPC samples were prepared varying the fly ash percentage from 15-35% whereas PSC samples were prepared varying the slag percentage from 25 to 70%. Total 64 nos. of cement batch were prepared and evaluated for the physical and chemical properties as per IS 4031 and IS 4032.

The results of physical performance evaluation carried out as per IS 4031 indicated that all the four control OPC samples were meeting the requirement of IS 269 except autoclave expansion. In case of PPC, the samples prepared using different type of high MgO clinker samples containing upto 8.4% MgO and minimum 25% fly ash addition were conforming to all the requirement as per IS 1489 (Part 1). Therefore, in case of PPC samples prepared using high MgO clinker containing MgO as high as ~8.4% minimum addition of fly ash was optimized to be 25% by weight. Similarly, in case of PSC, the samples prepared using different type of high MgO clinker samples containing upto 8.4% MgO and minimum 35% slag addition were conforming to all the requirement as per IS 455. Therefore, in case of PSC samples prepared using high MgO clinker containing MgO as high as ~8.4% the minimum addition of GBFS was optimized to be 35% by weight.

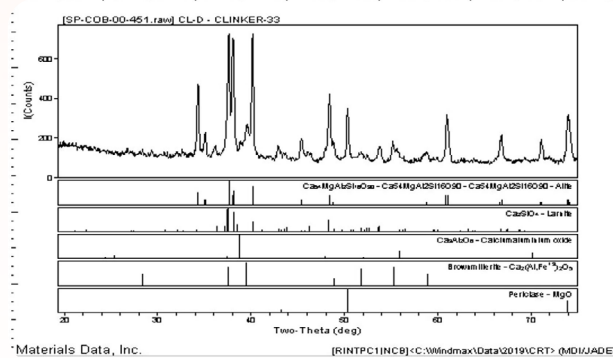
HIGHLIGHTS OF ONGOING RESEARCH PROJECTS



The results of investigation revealed that addition of fly ash and GBFS in the blended cements prepared from high MgO clinker samples were found to have potential effect on arresting the expansion caused by periclase (MgO). The performance results obtained so far are quite encouraging. Use of high magnesia (MgO) clinker for the manufacturing of the PPC and PSC will pave the way for utilization of high MgO content low grade limestone containing high MgO resulting in increased mine life besides improved sustainability in cement manufacture.



Clinker-3 ($MgO-7.50\%$) Periclase cluster is surrounded by both alite and belite crystals.



XRD of high MgO Clinker-3 ($MgO-7.50\%$)

XRD laboratory- Newest additon to the family



Dr. Bipin Prakash Thapliyal, Director, Central Pulp & Paper Research Institute (CPPRI), Saharanpur alongwith DG-NCB inaugurated the new X-Ray Diffraction Laboratory (XRD) on 19 August 2020. The ceremony included several eminent personalities like Dr. A K Dixit (Scientist E-II, CPPRI), Sh. Ramsarup (Sr. Deputy Secretary, Retd. CSIR (HQ)) and Sh. Ashok K Razdan (Ex-COA, CISR) apart from Head of Centers of NCB.

The services of new XRD laboratory shall be used to cater the present requirements of cement and construction sector. The new facility will be providing qualitative and quantitative analysis of all the minerals, using the expertise of NCB-staff and state of art instrument (Rigaku Smartlab). XRD studies have a wide application in cement and construction sectors, which includes studies on concrete, building materials, raw material for cement manufacturing and quality assessment. NCB with its continuous upgradation of research and testing instruments strives to serve the requirements of the industry.



A two-day online workshop was organized by NCB on 29th and 30th July 2020 which covered topics like: Inventory of AFR in India, CPCB guidelines on co-processing of AFR, Environment aspects, Characterization of AFR, System design for pre-processing, Safety aspects, Process problems due to AFR, Case studies, Quality related problems – Clinker quality & mineralogy of clinker, Impact of AFR on cement & concrete properties.

The workshop was attended by more than 190 participants out of which more than 143 participants were from most of the major cement companies of India.

Attendees were from various cement companies like

UltraTech Cement Ltd
Dalmia Cement (B) Ltd
Heidelberg Cement
ACC Ltd & ACL
J K Cement Works
Star Cement
Penna Cement
Nuvoco Vistas Corp.
J K Lakshmi Cement
Prism Johnson Ltd.
Orient Cement

Chettinad Cement
Sagar Cement
The India Cements Ltd
JSW Cement
The KCP Ltd
Bharathi Cement
Parashakti Cement
Birla Corporation
Shree Jaya Jyothi Cement
Wonder Cement
Other plants

The usage of AFs in cement industry is to be given a major boost due to limited fossil fuel resources, high fossil fuel prices and stringent environmental norms. To achieve high TSR in cement kilns, Indian Cement Manufacturers are adopting all possible AFs according to their geographical availability and economic viability. One basic requirement of the industry is to have a AF feeding and firing system that can handle maximum types of AFs.

The webinar covered topics which could help in increasing usage of various solid, liquid and gaseous fuels in the rotary cement kiln like paper waste, rubber residues, used tires, pulp sludge, plastic residues, biomass, domestic refuse, RDF, agro waste, oil bearing soils, ETP & sewage sludge, tar, chemical wastes, distillation residues, waste solvents, used oils, wax suspensions, petrochemical waste, asphalt slurry, paint waste, oil sludge, landfill and pyrolysis gas.

INDUSTRY FEEDBACK ON AFR WORKSHOP

<p>Sh. Raju Goyal Chief Technical Officer UltraTech Cement Ltd</p>	<p>He thanked DG-NCB for choosing this topic and taking lead. Indian cement industry needs to step up AF & ARM utilization. He also thanked NCB and participants for making the workshop successful. He defined the AFR business in two parts: 1st is installation of facility and feeding system which can be purchased or installed by money and 2nd is running the kiln operation efficiently with all AF & ARM which is an art as AFR utilization depends on successful kiln operation. He hoped that DG-NCB and his team will help the cement industry to overcome difficulties in process operation. He expressed his happiness viewing that cement industry has taken the target to achieve 25% TSR and informed that NCB will play a vital role in meeting this target in next 5 years.</p>
<p>Dr. A K Singh Corporate Quality Head UltraTech Cements Ltd</p>	<p>He congratulated NCB team for organizing the workshop on the relevant topics chosen for the workshop. He told that the workshop covered entire spectrum of AFR utilization and hoped that the participants of workshop will share the learning in their plants and implement them. He hoped that in future also these kind of workshop will be organized by NCB.</p>

INDUSTRY FEEDBACK ON AFR WORKSHOP



<p>Dr. K Mohan, Ex-DG, NCB</p>	<p>He complimented DG-NCB and his team for organizing the workshop on a relevant topic to industry. He congratulated NCB for its continued innovative development and rendering high technical services to cement industry. He told that the full faith of Indian Cement Industry and continued patronage has motivated NCB scientists and engineers to excel in their areas of expertise and provide high technical support to industry. NCB has advanced laboratory facilities to solve the problems of industry. He was happy to learn that a number of projects of utmost relevance and futuristic value have been taken up by NCB. He hoped that workshop will help all participants in increasing TSR at their plants.</p>
<p>Sh. Y J Shah The India Cements</p>	<p>He congratulated NCB team for organizing this important workshop. He urged participants to utilize what they have gained in this workshop. He urged participants to try and pre-process/ co-process and utilize whatever waste is available near one's plant. He also told that with support of NCB, entire industry will benefit.</p>
<p>Dr. S K Handoo Advisor My Home Industries</p>	<p>He congratulated NCB of organizing the online workshop under the adverse condition of COVID 19. Regarding target of 25% TSR, he highlighted that India has moved from 1% to 5%. With enhanced usage of AFR, there is a need of inventory based mapping of AFR just like for fly ash on an app based platform. He asked NCB to take lead for enhanced usage of AFR and congratulated NCB team for comprehensive presentations on various subjects of importance.</p>
<p>Dr. Abhishek Rai Corporate Quality Head Dalmia Cement (B) Ltd</p>	<p>He thanked and congratulated NCB team for arranging knowledgeable sessions as it was a great learning experience. He told that the workshop has helped all in getting awareness about sampling, equipment for characterization which will help in achieving TSR of 25%. He hoped that the learnings from workshop will be implemented by participants in their plants. The sessions on impact of AFR on clinker, cement and concrete were really helpful. Presentations were very informative and feedback received from the participants are very encouraging. He thanked DG-NCB for the initiative taken.</p>
<p>Sh. Ashwin Raykundalia Unit Head Ambuja Cements Ltd</p>	<p>He shared his experience of using Alternate Fuels. He told that the important thing is increase in specific heat consumption and process problems. He hoped that NCB can prepare a database on what should be done when some operational problems arise in cement plants and urged NCB to focus on Alternate Raw Materials apart from Alternate Fuels. He complimented NCB for organizing the workshop.</p>
<p>Sh. Sushil Paneri Unit Head Ambuja Cements Ltd</p>	<p>He congratulated NCB on conducting the workshop. He hoped that workshop will help industry in utilizing alternate fuels and urged NCB team to find solution on process problems like CO peaks while using AF like RDF etc. Regarding ARM, he told that more focus should be given for its utilization in cement industry. NCB is doing a great job and hope in future will be associated with NCB for increasing TSR.</p>
<p>Sh. Murali Prasad Reddy Unit Head Zuari Cement</p>	<p>He congratulated NCB for conducting a wonderful programme. He told that the training was excellent and urged NCB to focus more on the impact of alternate fuel on final product.</p>
<p>Sh. Dinesh Mangal The India Cements</p>	<p>He thanked NCB for organizing the workshop which covered all aspects of AFR. He told that AFR is much talked subject but less popular on ground. Regarding ARM, the need of the hour is to optimize cost. He also told that the cement industry is playing vital role in utilizing waste.</p>
<p>Sh. Malaya Panda, UltraTech Cement Ltd.</p>	<p>He lauded the entire NCB team for the presentations made for enhancing TSR. He told that UltraTech is increasing AFR usage to the maximum and have achieved 25% TSR. He gave assurance to support NCB. He also told that from the webinar one can learn many things which can be readily implemented in the plant.</p>

INDUSTRY FEEDBACK ON AFR WORKSHOP

Sh. Manish Kuchaya, UltraTech Cement Ltd.	He thanked DG-NCB and team for the excellent presentations on various topics related to maximization of AFR utilization in the cement industry. He told that the contents of presentation were nicely designed and were very elaborative with latest facts and figures, discussing latest feeding systems and processing, safety aspects during the storage, standards adopted across the world for evaluating AFR quality and its detailed impact on clinkerization & clinker quality. He told all participants that the workshop has made the industry realize about the expertise NCB has developed in AFR, and now going forward, NCB and various cement companies in India would work together to meet the target of 25% TSR in the Indian cement industry in the near future.
Sh. B K Singh, Star Cement	He told that the workshop was really good and informative. He asked for NCB's help to know the scope of AFR utilization in cement plants of North-East India.
Sh. Chandrakant Nayak, Dalmia Cement	He told that to achieve the target of 25% TSR, industry and NCB should work together as it is not an easy target. He said that the workshop was nicely designed. The course content was very good with new information and nicely presented by all faculties. After attending this workshop, he felt confident to increase %TSR.
Sh. Sanjay Sharma, JSW Cement	He thanked NCB for the informative programme. He sighted the practical aspects that were shared in the workshop. He also told that the case studies that were discussed were particularly very good. He also asked for the list of suppliers and proto-type of equipment required for particular waste to be shared in such future workshops.
Sh. Narendra Dev Diwakar, Prism Johnson Limited	He thanked NCB team for presenting and explaining the impact of AFR on clinker and cement. He told that the sessions on environment, safety and process are very well explained.
Sh. Milan Trivedi, ACC Ltd	He thanked NCB team for wonderful sessions on AF.
Sh. Sunil Kunwar, Dalmia Cement	He rated the workshop as very good, thanking all speakers and DG-NCB taking steps with the industry towards sustainable development.
Sh. Swarup Rano, UltraTech Cement	He appreciated efforts made by NCB team and told that the workshop was incredibly informative and interesting.
Sh. Dinesh Kumar Purohit, Heidelberg Cement	He thanked NCB for valuable presentations and sighted that insights provided on case studies were informative to enhance AFR optimization.
Sh. Ganga Raju Jinkala, Zuari Cement	He rated the programme as very good, covering the subjects about elements and metals in AF material and their impact on operation and quality.
Sh. Mahendra Chaudhary, Orient Cement	He rated the two-day programme as very good having many fruitful takeaways for all participants from various disciplines.
Sh. Alla Nagaraju, Zuari Cement	He told that the workshop showcased very good information by sharing all inputs & clarifications by experts.

DG-NCB thanked all participants and industry experts for attending the online workshop and sharing their valuable feedbacks. He informed that 22 Expertise Groups have been formed in NCB on relevant topics like Carbon Capture and Utilization, Renewable Energy, Advanced pyro-processing etc. He also informed about his initiative “*NCB-Industry Interaction*” in which one cement plant will be selected for the interaction based on mutual availability of the plant technical team and the Expertise Leaders of NCB. Both the teams will work towards understanding the problems presented by the plant officials and chalking out solutions to such problems. This will help NCB in taking up future research projects based on plant issues and also in creation of data bank.

**Sh Mahendra Singhi,
Chairman-NCB & MD &
CEO-Dalmia Cement (B) Ltd.:**
Well done. Congratulations to
you & your team. Keep it up.
Thanks!

**Dr Shailendra Chouksey,
Whole Time Director,
JK Lakshmi Cement:**
Great,
Congratulations!

**Sh Sumeet Banerjee,
Chairman-
Editorial Advisory Board, Indian
Cement Review:**
This is a wonderful idea. It will be
huge success.

**Sh Jamshed N Cooper,
MD, HeidelbergCement:**
It is indeed heartening to see the unrelenting
efforts of NCB to reinforce the importance of a
circular economy and more important, showing the
way to achieve it. I see it as a big step towards achieving
our sustainable goals that are relevant in the National and
Global context to - *"make the world a wonderful place for
our generations to come"*. We will support you
in every endeavour
of yours.

**Sh Sunil Mahajan,
CMO, Dalmia Cement:**
Great Initiative!

**Sh Y J Saha,
Unit Head -
The India Cements:**
This interactive meeting will help you in
identifying and preparing plant specific training
modules which in turn will help individual plant to
solve their specific issues. Win-Win situation. Plants
will get rid of old technical issues and NCB
will be able to generate revenues.
All the best.

**Sh Raju Goyal,
Chief Technical Officer,
UltraTech Cement Ltd.:**
Excellent Idea!
We are with you in all your
initiatives.

**Sh Ashwin
Raykundalia,
Unit head-
Ambuja Cement Ltd.-**
Excellent Idea, we
are happy to work together!

**Dr A K Singh,
Corporate Quality Head-
UltraTech Cement Ltd.:**

Interaction with cement plants directly to identify their need of supports in specific area is a great & fantastic idea. Cement plants will be able to solve their issues by getting guidance directly from country's premier knowledge-based Centre. It will also pave the way of effective interactions between Industry and NCB.

**Sh Rajnish Kapur,
Business Head -
J K Cement Works:**
Excellent! We will certainly use this opportunity.

**Sh Manish Singh,
Unit Head - Prism Johnson Ltd.:**

We are fully aligned with and laud the creative initiatives by NCB. Interactive sessions with industry will leverage to propagate novel ideas & experiences towards national and global efforts on various matters like natural resources conservation & carbon neutral cement. Our best wishes!

**Dr Abhishek Kumar Rai,
Corporate Quality Head-
Dalmia Cement (B) Ltd.:**

This type of interaction will definitely help us to open up the window of process and quality related issues in the plant units and such discussions can be helpful and bring solution to the plant issues faced with the collaboratively effect of plant and your experienced NCB technical team.

**Dr S K Saxena,
J K Lakshmi Cement:**

During this unprecedented period of pandemic, when personal interactions are jeopardized badly, the excellent initiatives taken by NCB under remarkable leadership of DG-NCB are becoming useful. The Virtual platform of knowledge sharing is helping industry personnel and keeping them updated on current developments. I will request to continue these activities in future till we revert back in normal. All the best to NCB team.

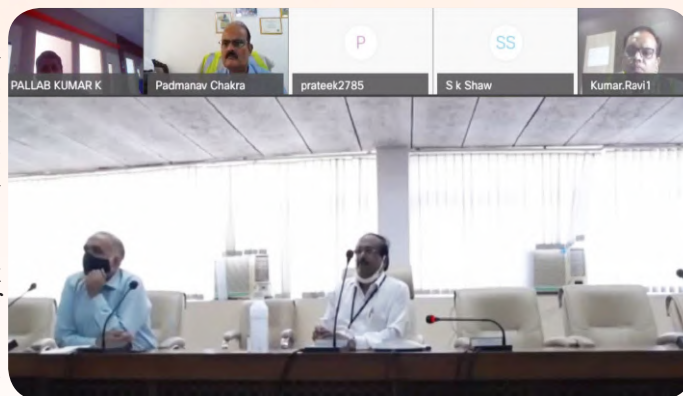
**Sh Prakhar Shrivastava,
Head-QC & QA,
J K Cement Works:**

It is an excellent idea and great opportunity for us to work together. This interaction of NCB experts with plant team will help to work on specific challenges and accordingly implementations of solutions.

DG-NCB while thanking all the participants informed about his initiative of conducting “*NCB-Industry Interaction*” in which cement plants and Expertise Leaders of NCB will get an opportunity to interact with technical team of various cement plants. The idea of the initiative is to take up future research projects based on cement plants operational & quality related issues and also in creation of data bank for problems and optimal solutions to such problems.

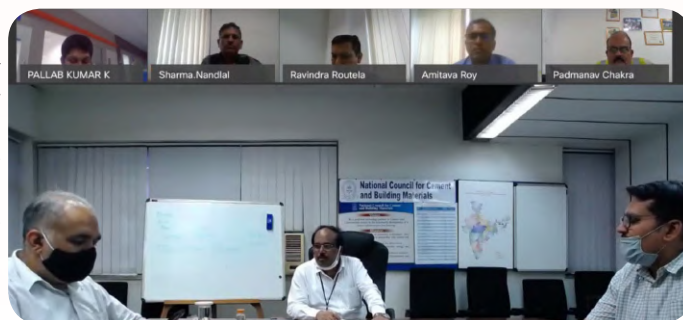
INTERACTION WITH M/s ADHUNIK CEMENT LTD

The first “*NCB-Industry Interaction*” was done with M/s Adhunik Cement Ltd, a unit of Dalmia Cement (B) Ltd on 26th August 2020. During an hour long discussion, the plant team shared their present operational and process related problems. Based on the problem shared, a detailed exchange of information covering various aspects like mines limestone characteristics, analysis of all types of fuel being used, raw mix and kiln feed data being maintained, quality of clinker being produced, process parameters like kiln inlet oxygen, kiln burner momentum and emission data was held between the two teams. Plant team also shared details about various measures taken at their end to mitigate the problem. Based on the observations, NCB team suggested a couple of suitable measures to the plant team to tackle the problem.



INTERACTION WITH M/s CALCOM CEMENT LTD

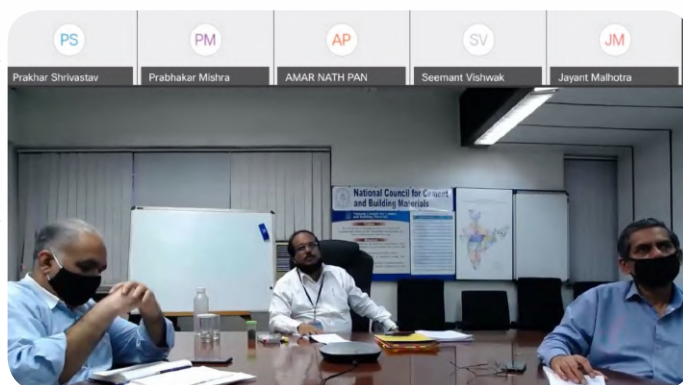
Second “*NCB-Industry Interaction*” was done with M/s Calcom Cement Ltd, a unit of Dalmia Cement (B) Ltd on 27th August 2020. The plant team shared their present problems related to kiln operation. Based on the problem, a detailed exchange of information covering various aspects, like limestone & fuel characteristics, mix design and raw meal data, clinker quality and process parameters took place. Based on the discussions, NCB team suggested to take up relevant study.



INTERACTION WITH M/s J K CEMENT LTD

The third interaction was done with M/s J K Cement Nimbahera and Mangrol on 31st Aug 2020. During an hour long discussion, the plant team shared the details about the plant configuration, the nature of limestone deposits, various corrective materials being used in the raw mix and the kiln operation philosophy being presently adopted.

The plant also shared their process related problems with the engineers and scientists at NCB. Based on the observations of the kiln operation, NCB team suggested to take up a detailed study for doing analysis to identify the source of problem which contributes to such operational behaviour.



DG-NCB is now appointed as a member of the Research Council of CSIR-National Physical Laboratory (NPL) which shall advise on R&D programmes, review R&D activities and advise on networking and fostering linkages with other CSIR national laboratories.

50th MEETING OF IDC

The 50th Meeting of Infrastructural Development Committee (IDC) was held on 07th August 2020 under Chairmanship of Sh. V S Narang, Director (*Technical*), My Home Industries (P) Ltd. The function of IDC is to advise the Board of Governors of NCB on various aspects related to land, building services, equipment and facilities at various NCB units. The members of IDC are:

Name	Designation
Dr. S S Gupta	Senior Development Officer, DPIIT
Sh. S K Deshpande	Scientist G, DSIR
Dr. Rakesh Kumar	HoD-CRRI
Sh. Chander Shekhar	Addl. GM- NTPC
Dr. Sujith Ghosh	Executive Director, Dalmia Cement (B) Ltd.
Dr. B N Mohapatra	Director General-NCB
Joint Directors, HOCs/HOSs	NCB
Member Secretary - IDC	NCB

A presentation, highlighting the details of infrastructure upgradation activities undertaken at NCB-Ballabgarh and NCB-Hyderabad and status of work through visuals/photographs was made. DG-NCB explained the requirement of funds for procurement of latest equipment as well as replacement of obsolete equipment. He also informed about the planning of setup of Alternate Fuels laboratory in a phased manner to cater the requirement of industry. Proposed list of equipment (*based on the industry requirement in the recently conducted AFR workshop*) to be procured in the first phase was also discussed. DG also informed about the planning of expansion of Bhubaneswar project office to cater the cement plants of eastern zone.



64th MEETING OF AFC



The 64th Administration & Finance Committee (AFC) meeting was held on 3rd September 2020 under the Chairmanship of Sh. Rajendra Chamaria, Vice Chairman & Managing Director, Star Cement Ltd. The function of AFC is to advise the Board of Governors of NCB on issues relating to financial planning, budgets, accounts, manpower growth plan and service matters including various rules of NCB. The members of AFC are:

Name	Designation
Dr. S S Gupta	Senior Development Officer, DPIIT
Ms Sunita Yadav	Director, Integrated Finance Wing, DPIIT
Sh. Dharmender Tuteja	Executive Director F&A & Commercial, Dalmia Cement (B) Ltd
Sh. C K Bagga	Vice President (<i>Fin. & A/Cs</i>), JK Lakshmi Cement Ltd
Dr. B N Mohapatra	Director General-NCB
Joint Director & Head-HRS	NCB
Member Secretary - AFC	NCB

The Committee took vital decisions on behalf of the Board of Governors on individual personnel cases and on issues of administrative nature which were referred to it by the Board and by DG-NCB.

Ninth meeting of the Panel for Revision of Cement Standards, CED 2:1/P1 in joint session with Fourth meeting of the Working Group for the Revision of IS 650, CED 2:1/P1/WG was held on 19th August 2020 in which NCB officials took part where present status of projects in which BIS is carrying out work along with NCB were discussed. Various issues and standards were discussed in the meeting like:



- Clinker for Blended Cement (*having High MgO*)
- Specification for Portland Limestone Cement (*PLC*)
- Limestone Calcinated Clay Portland Cement (*LC3*)
- IS 650:1991: Specification for Standard Sand for Testing Cement
- Use of Marble Slurry in cement manufacture
- Geopolymeric concrete
- Guidelines for use of various types of cements
- Use of pulverized fuel ash' in IS' 6491:1972, Methods of Sampling Fly Ash
- Ultrafine fly ash High Volume Fly Ash Blended Cements
- IS 6452:1989: High Alumina Cement for Structural Use – Specification
- Performance evaluation of cement samples by mechanical mixing and keeping fixed w/c ratio for compressive strength determination vis-à-vis as per Indian standard test procedures
- Specification for Dry Mix Mortar
- Use of Automatic Blaine Type apparatus in IS 4031 (*Part 2*)
- Revision of IS 4032:1985 Method of Chemical Analysis of Hydraulic Cement (*First Revision*)
- Revision of IS 1727: 1967 Methods of Test for Pozzolanic Materials

New proposals to prepare Indian standard on use of Rice Husk Ash as a Pozzolana and on Alkali-Activated Cementitious Materials (*A. A. C. M.*) were also received and discussed in detail.

INTROSPECTION

Review Meeting at NCB-Ballabgarh

In the review meeting, it was informed that all centres and service groups have modified their quality objectives based on SMART (*Specific, Measurable, Achievable, Reliable, Time bound*) principles. Monitoring and measurement of laboratory, project execution, purchase, maintenance, general affairs, safety, training processes are being regularly done in respective departments of NCB. DG stated that efforts should be made for publishing more number of papers in national and international journals. He also asked officials to conduct more number of webinars on various topics like AFR, advance analysis techniques like XRD/XRF etc. for industry. He told that formation of expertise groups having inter departmental teams is envisioned to ensure problem solving for issues of cement industry through innovation. DG also emphasized for training for the engineers/scientists of NCB in their functional area and concluded by expressing satisfaction on modification of quality objectives based on SMART principles.

Review Meeting at NCB-Bhubneswar

DG-NCB expressed his vision for NCB-Bhubaneswar Unit in accordance with the expansion plan approved by BoG and shared the quality policy of organization which is “*commitment to provide reliable and accurate test results to the total satisfaction of customers in accordance with the stated methods and customer’s requirements*”. He suggested that, after getting NABL accreditation; BIS approval should be taken so that BIS approved samples could be tested at NCB Bhubaneswar laboratory viewing quality testing needs of cement plants in eastern region. In the meeting, it was discussed to upgrade chemical laboratory infrastructure and speed up the process on allotment of additional space adjacent to existing facility. He expressed his satisfaction over achievements of various quality objectives and asked to explore the new areas of providing services of material testing as per the emerging requirements of customers and make customer base wider too.

Unit In-Charge (*UIC*), NCB Bhubaneswar informed that laboratory personnel are being provided trainings regularly as per ISO/IEC 17025:2017 and standard test methods. An action plan is also prepared for improvement of the laboratory.

Keeping NABL accreditation and present scope of work in mind, DG-NCB suggested to take up testing of different cements produced in and around Odisha i.e., OPC, PSC, PPC, etc. and other materials like slag, gypsum, fly-ash and clinker also. In his concluding remarks, DG-NCB expressed satisfaction for the progress of testing services and appreciated the efforts in developing testing facilities to attract more customers.



DELIBERATIONS BY EXPERTISE GROUPS

The last edition of Newsletter informed about 22 inter-departmental Expertise Groups constituted with a mandate to carry out research on issues significant to the industry such as lowering clinker factor, increasing production efficiency, improving performance, enhancing renewable energy usage, cutting CO₂ emissions using low carbon technologies & carbon capture. During this quarter, deliberations were held by 6 groups. Following are the excerpts of those deliberations:

BND & SRM (BND): The group led by Sh Suresh Kumar Shaw discussed how Certified Reference Materials play important role in maintaining quality infrastructure through testing and calibration with precise measurements traceable to SI units. It is intended to use as primary standard for calibration of instruments, validation of method for the characterization of the measure and for analysis of cement & cementitious product as well as Proficiency Test. NCB has produced 12 Bhartiya Nirdeshak Dravyas (BNDs) in collaboration with CSIR-National Physical Laboratory (NPL), Delhi. The development of Indian CRMs as BND enable calibration of equipment, establish metrological traceability and measurement procedure.

ENERGY CONSERVATION (ECM): The group led by Sh Ankur Mittal discussed on the use of innovative materials and renewable energy resources in green/sustainable buildings, reducing environmental impact and advancing productive utilization of natural assets and reused or recyclable materials. Green building has three fundamental measurements: ecological, cultural and economic sustainability. Accomplishing sustainability depends upon regional differences, expectations of people and culture. The traditional buildings satisfy necessities of well-being, but utilize excess energy and other natural assets but '*Green Buildings*' adopt variety of eco-friendly concepts and provide same comfort with healthy environment. The discussion focussed on study of green building rating concepts. Through this, an attempt was made to clearly understand applicable IGBC and GRIHA rating system assessment criteria to be considered before certification.

ADVANCED PYRO-PROCESSING (PYR): The group led by Sh M V Ramachandra Rao discussed on the Industry 4.0 digital innovations, from advanced data analytics to intelligent networks, offering tremendous opportunity to create value and raise efficiency of production processes. Few cement producers have implemented 4.0 advances in any systematic way. Producers that are quick to adopt 4.0 technologies can therefore gain a competitive advantage over their peers. It can be implemented for Alternative Fuel optimization, predictive process optimization & quality analysis.

GEOLOYMER CONCRETE (GPC): The group is led by Sh Amit Trivedi. Group member, Sh Lalit Kumar discussed on '*Geopolymers*', a relatively newer class of building materials. Owing to increased environmental concerns and diminishing natural resources, geopolymers are spotted as a valuable alternative for Portland cement. They have similar cementing characteristics as Portland cement, but can be produced out of by-products from other industry (e.g. *fly ash*) and less energy craving and less CO₂-emitting materials (e.g. *calcined clay, alkali activators*). The study of alkali activation process of aluminosilicate sources as a method of synthesizing new cementitious materials is gaining relevance. Currently, there are, however, not that many practical applications. NCB has taken up project on development of geopolymer concrete for its application in pavements and other precast concrete constructions. Paver blocks and other precast products have been developed and project is in progress for developing usage guidelines for the product. Cost of developed products are comparable with cement concrete blocks in use. Field trials are carried out using developed products and draft guidelines preparations for usage is under progress. Another project was sponsored by M/s JSW wherein study was taken up to develop geopolymer concrete using high volume of GGBFS along with fly ash. Solid and hollow building blocks have been developed.

LOW CARBON CEMENT (LCC): The group is led by Sh S K Agarwal which discussed on multifarious topics like: challenges before cement industry, carbon footprint, global and Indian cement production, potential carbon emission and approaches to mitigate it, low carbon cement systems, process CO₂ emission released by clinker compounds, belite rich portland cement, Calcium Sulfoaluminate clinker, BYF clinker, LafargeHolcim Aether clinker, Heidelberg's BCT Technology, clinker substitution, blended cements, potential cement composition by 2050 and Indian as well as global clinker to cement ratio.

REINFORCEMENT CORROSION - PREVENTION AND MITIGATION (RCP): The group is led by Sh P N Ojha. Group member Sh Sanjay Mundra discussed on multiple topics ranging from: carrying out condition assessment of existing RCC structures through NDE techniques, Third Party Quality Inspection in repair & restoration of RCC structures, development of STN laboratory, interaction with customers for promoting new NDT technology, knowledge transfer, preparation of cost estimates, development of RMC plant and key activities of business.

IDENTIFICATION OF ENERGY SAVING OPPORTUNITIES IN CEMENT PLANT

A two-day webinar was organised by NCB on “*Identification of energy saving opportunities in cement plant*” on 27th & 28th August 2020.

NCB has recently revised its Expertise Groups structure. The Energy Management expert group is one of the key expert group within NCB which is given the target to facilitate cement industry with every possible energy management solution and services. Updating of knowledge and technical know-how is one of the key factor for efficient plant operation with skill development of work force.

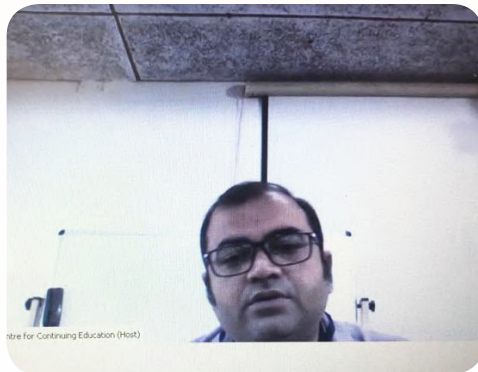
More than 60 participants from Indian and foreign cement plants attended this webinar which had fruitful takeaways. The webinar was inaugurated by DG-NCB along with Sh. Ankur Mittal (*Webinar coordinator*) and Dr. D K Panda (*Head- CCE*). The topics that were covered in the webinar were:

- Electrical energy efficiency in cement plants.
- Advances in energy saving opportunities in cement plant pyro processing.
- Role of compressed air assessment in plant and identification of energy saving opportunities.
- Instrumental role of PAT scheme for sustainable energy management in cement plants.
- Advanced energy efficient grinding in cement plants.

The participants, experts from OEMs like Loesche, KHD Humboldt Wedag and institutions like Bureau of Energy Efficiency appreciated the quality of presentations presented and content of the webinar. They also requested NCB to increase the frequency of providing such knowledge sharing platforms to the industry.



THE ART OF ASSET MANAGEMENT BY IMPROVING THE OPERATIONAL EFFICIENCY OF CEMENT PLANT

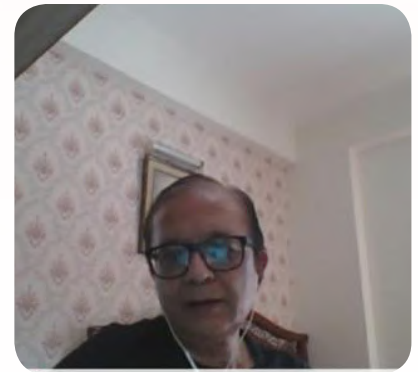


Input Materials and fuel (Captive and non captive)

Any input raw material and fuel, has a cost and limited availability. It also is responsible for product quality substantially. Their share in COP is around 1/3, hence any improvements is always welcome.

Some sample queries:

- Can we improve the present Raw mix, to improve quality / reduce cost?
- Can we change our fuel mix to reduce our cost
- Our High grade limestone is depleting, what is the balance plant-life based on available limestone?
- Are the materials being exploited in a professional and cost effective manner?
- We have good quality limestone and other raw materials in this cluster, however our raising costs are higher than our competitors. Why?



COVID-19 pandemic has impacted not only the daily lives of common people but also dented the economy and manufacturing industry in an unprecedented way. The Indian cement industry is trying to recover the losses incurred during lockdown time. NCB conducted a training programme on “*The Art of Asset Management by Improving the Operational Efficiency of Cement Plant*”, the objective of which was to highlight the best utilization of existing assets of a cement plant like land, human resources, equipment, raw materials, utility assets and logistics. The training was imparted by Sh. J P Gupta (*CGM-Holtec Retd.*) and Sh. Kapil Kukreja (*Manager-NCB*) drew attention on to the hidden assets like losses in energy, un-utilised or under utilised capacity of equipment and presented asset management model.

Further to emphasise on better utilization of land , the concept of energy farming was introduced and potential of energy farming in cement plants was presented. 30 participants from various Indian cement plants attended the training and interacted with the faculty. Discussions were held on how energy farming concept may become a game changer in the cement industry. The participants also requested NCB to further discuss the modalities of energy farming with MoEF as well as technical feasibility and economic viability of the energy farming concept in Indian cement industry.

NABL Accreditation of NCB-Bhubaneswar- Independent Testing Laboratories



NCB Bhubaneswar unit providing technical services since 2016, in the field of cement, concrete and construction industry to contribute in developing durable & sustainable civil infrastructure and to cater the technical needs of cement industries in the state of Odisha & eastern region.

Apart from providing quality control / quality assurance services in accordance with ISO/IEC 17020-2012 in the construction scope sector built by Industrial Infrastructure Development Corporation of Odisha (IDCO) across the state of Odisha, the unit established state of art Independent Testing laboratories (ITL) to provide testing facilities of cement, concrete making materials and hardened concrete. The laboratories are following due procedures in line with NABL procedures and accreditation certificate as per ISO/IEC: 17025-2017 is being received shortly.

NCB-ITL is located at Plot No. 145, Zone B, IDCO Central Store, Mancheswar Industrial Estate, Bhubaneswar -751010. NCB-Bhubaneswar unit has also setup another site office in Sambalpur (Odisha) to handle quality assurance services in the region.

NCB Bhubaneswar has all the essential facilities for testing of construction materials samples of cement (*physical*), concrete, brick, coarse aggregates, fine aggregates, Tiles and few limited testing on AAC Blocks, Granite, GSB, WMM and soil samples including Automatic Compression Testing Machine (ACTM), Physical Testing Laboratory and Non-Destructive Testing (NDT) equipment such as Rebound hammer. All the equipment available in the laboratories are duly calibrated.

Activities related to setting up of chemical analysis laboratory for cement and cementitious materials at NCB-Bhubaneswar is under progress and there is defined road map and target date of NABL accreditation & BIS Lab Recognition Scheme [LRS] by end of this financial year.

Third-Party Quality Assurance and Audit (TPQA) for the expansion project of Tamil Nadu Trade Promotion Organisation (TNTPO), Chennai

NCB, Hyderabad and Tamil Nadu Trade Promotion Organisation (TNTPO), Chennai has signed agreement for Third Party Quality Assurance and Audit (TPQA) for the expansion project at Chennai. TNTPO is a non-profit organisation & joint venture company of India Trade Promotion Organisation (ITPO) and Tamil Nadu Industrial Development Corporation Limited (TIDCO), incepted to promote trade & commerce through facilitation by organizing National and International trade fairs and thereby enhancing the global competitiveness of the state of Tamil Nadu.

Under this agreement, NCB-Hyderabad unit would provide third party quality assurance & audit for the Chennai Trade Centre expansion project with an objective to create durable and sustainable landmark infrastructure facility in Chennai with RCC structure along with essential allied facilities, internal & external services and external development work of about 1.70 lakh sq.ft built-up area being added to the existing area of about 1.13 lakh sq.ft. NCB is proud to be part of this prestigious project and has commenced the third-party inspections for civil works during September 2020.



74वां स्वतंत्रता दिवस



महानिदेशक महोदय का संदेश

महानिदेशक महोदय ने अपने संदेश में सहकर्मियों को 74वें स्वतंत्रता दिवस के पावन अवसर पर हार्दिक बधाई एवं शुभकामनाएँ दीं। उन्होंने ये कहा की आजादी के संघर्ष का इतिहास भारत में जनमानस के अदम्य साहस व दृढ़ इच्छाशक्ति का परिचायक है। एनसीबी संस्थान ने अपने कार्य में उतरोत्तर प्रगति बनाये रखने के लिये "न हि ज्ञानेन सदृशं" सदवाक्य को अपनाया है, अर्थात् इस संसार में ज्ञान के समान पवित्र कुछ भी नहीं है और ज्ञान को ही हम अपना परम लक्ष्य मानते हैं।

सभी सहकर्मियों को संबोधित करते हुए उन्होंने कहा की 2020 वर्ष कोरोना संकट का वर्ष रहा है, पर हर विपत्ति एक अवसर ले कर आती है। हमें उस विपत्ति का डट कर मुकाबला करना चाहिए तथा उस अवसर का एक

नीतिगत लाभ उठाने के लिये बराबर प्रयासरत रहना चाहिए। एनसीबी संस्थान भी कोरना महामारी में लगातार कार्यव्रत है तथा नये नये अवसर को तलाश कर एक नयी दिशा में निरंतर आगे बढ़ रहा है। कोराना काल में संस्थान में ऑनलाइन क्लाससेस रखी गयी जिसमें सभी तकनीकी अधिकारियों तथा कर्मचारियों ने पूर्ण रूप से भाग लिया तथा अपने रिसर्च एवं कार्य पर संस्थान को अवगत कराया। संस्थान में इसी कड़ी में बाईस विशेष तकनीकी दल भी बनाये गये हैं।

महानिदेशक महोदय ने ये भी बताया की एक तकनीकी टीम ने एएफ़आर विषय पर दो दिवसीय कार्यशाला का आयोजन किया जिसमें भारतीय सीमेंट उद्योग ने बढ़ चढ़ कर हिस्सा लिया। उन्होंने कहा की एनसीबी को लगातार ऐसी कार्यशाला आयोजित करनी होगी तथा कार्यशाला के पश्चात सभी प्रतिभागियों से बराबर चर्चा भी करनी होगी जिससे उस क्षेत्र में नये प्रोजेक्ट्स लाये जा सकें।

उन्होंने सभी सहकर्मियों से अनुरोध किया की अपनी रिसर्च को विश्व स्तरीय बनाने के लिए निरंतर प्रयास करें तथा अधिक से अधिक पपेर्स पब्लिश करें।



हिंदी पखवाड़ा 2020



संस्थान में हिंदी पखवाड़ा 2020 का शुभारंभ 14 सितंबर 2020 को महानिदेशक के कर कमलों द्वारा किया गया। राजभाषा कार्यान्वयन समिति के अध्यक्ष श्री अभिषेक अग्निहोत्री ने बताया कि संस्थान में हिंदी पखवाड़ा 14 सितंबर से 28 सितंबर 2020 के बीच मनाया जाएगा तथा पखवाड़े के दौरान हिंदी भाषा के प्रचार प्रसार के लिए हिंदी प्रतियोगिताएं क्रमश आयोजित की जाएंगी।

1	हिन्दी निबंध प्रतियोगिता
2	टिप्पणी लेखन प्रतियोगिता
3	श्रुत लेखन प्रतियोगिता
4	कविता पाठ / स्वविचार प्रतियोगिता

कार्यक्रम में महानिदेशक ने हिंदी समिति के सभी सदस्यों को हिंदी पखवाड़े की बधाई दी तथा भविष्य के लिए शुभकामनाएं दी। महानिदेशक ने हिंदी कार्यान्वयन समिति के द्वारा हिंदी के प्रचार प्रसार में किए जाने वाले कार्यों की सराहना की। इसके साथ साथ हिंदी समिति के अध्यक्ष श्री अभिषेक अग्निहोत्री ने बताया कि एनसीबी दर्पण के द्वितीय अंक का प्रकाशन इस बार भी एनसीबी के वार्षिक दिवस पर किया जाएगा, प्रतियोगिताओं के प्रथम व द्वितीय विजेताओं को एनसीबी दिवस पर मुख्य अतिथि द्वारा सम्मानित किया जाएगा तथा अन्य प्रतियोगियों को भी प्रोत्साहन पुरस्कार से सम्मानित किया जाएगा। पखवाड़ा के दौरान हिंदी भाषा में अधिक से अधिक कार्य करने वाले अधिकारी व कर्मचारी को भी सम्मानित किया जाएगा।





ABOUT THE COUNCIL

National Council for Cement and Building Materials (NCB), set up in 1962, then known as Cement Research Institute of India, is the apex body in India under the administrative control of Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India, devoted to research, technology development and transfer, education and industrial services for cement, building materials and construction industries. Its multi-disciplinary activities are performed in an integrated and coordinated manner through its units that are located at Ballabgarh (Near Delhi), Hyderabad, Ahmedabad and Bhubneswar. The six corporate centres of the council guide the activities at different units. The centre and their main areas of activity are :

Centre for Cement Research & Independent Testing (NCB-CRT) - Fundamental and Basic Research, Cement and other Binders, Waste Utilization, Refractories & Ceramics and Testing Services.

Centre for Mining, Environment, Plant Engineering & Operation (NCB-CME) - Geology, Mining & Raw Materials, Process Optimization & Productivity Enhancement, Energy Management, Plant Maintenance, Project Engineering & System Design, Environmental Management.

Centre for Construction Development & Research (NCB-CDR) - Structural Optimization & Design, Structural Assessment & Rehabilitation, Concrete Technology and Management.

Centre for Industrial Information Services (NCB-CIS) - Industrial Information and Data Bank, Integrated IT Solutions, Publication, Seminars & Conferences, International & National Linkages, Image Building.

Centre for Continuing Education Services (NCB-CCE) - Long-Term & Short-Term Courses, Special Group Training Programmes, Simulator Based Courses, Workers' Development Programmes.

Centre for Quality Management, Standards & Calibration Services (NCB-CQC) - Total Quality Management, Calibration Services, Development and Supply of Certified Reference Materials.

ABOUT THE COUNCIL

National Council for Cement and Building Materials

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