



NCCBM NEWS LETTER

16th NCB International Seminar Edition

Special Issue



Ballabgarh-Head Office



Hyderabad-Unit



Ahmedabad-Unit



Bhubaneswar-Project Office



Clean and Green is Sustainable

A Strong Message of 16th NCB International Seminar

HEADLINES

- Seminar feedback from the industry
- Inauguration of Seminar by Sh Guru Prasad Mohapatra-Secretary, DPIIT, MoCI, GoI
- Panel Discussions:
 - Climate Change- A threat or opportunity for cement industry
 - Cement & Construction industry- A Convergence point of circular economy
- Keynote presentations
- Special Session with Hon'ble Minister of Railways and Commerce and Industry, Sh Piyush Goyal
- Release of 2nd Edition of Compendium "The Cement Industry-India 2019" by Hon'ble Minister
- Address by Hon'ble Minister
- Distribution of National Awards on Energy Efficiency, Environmental Excellence and Total Quality Excellence by Hon'ble Minister
- Technical Sessions including Special Technical Session for students
- Glimpses of Cultural Program and Technical Exhibition
- Concluding Session
- Release of NCCBM Newsletter
- Recognition to Papers of High Merit presented during the Technical Sessions
- Valedictory Address by Sh Shashank Priya, Addl. Secretary, DPIIT, MoCI, GoI
- List of Papers presented by NCCBM Scientists

Editor: Sh Kapil Kukreja
Sh Saurabh Bhatnagar
Ms Richa Mazumdar

Designed by: Sh Imtiaz Khan

From the desk of Director General

Dear Readers,

It is indeed with much pleasure that I'm sending out to you and through you to your personal and official family, best wishes for the New Year 2020. Your continued patronage, support and cooperation with us has made our association a source of immense satisfaction and encouragement. I'm presenting this 'Special Seminar Edition' of NCCBM News to the Cement, Concrete, Construction, building materials & allied sectors which brings to you an extract of the proceedings of the 16th edition of NCB International Seminar on Cement, Concrete and Building Materials held from 03rd to 06th December 2019 at Manekshaw Centre, Delhi in a concise manner. This will especially be helpful to those who could not participate in the Seminar due to other pressing engagements and prior commitments as they'll be able to catch a glimpse of the highlights of the event.

With the 16th 'Mahakumbh' on Cement, Concrete and Building Materials completed successfully, the onus now rests with the stakeholders of the industry to work in the direction of fulfilling promises which they made to the industry, society and to themselves. During a special session on the opening day of seminar, Shri Piyush Goyal, Hon'ble Minister of Railways and Commerce & Industry congratulated NCB for organizing the seminar with a relevant theme of "Clean and Green is Sustainable" and all the 26 winners of National Awards on Energy, Environment and Total Quality Excellence for the year 2017-18 and 2018-19. He highlighted that to reach 10 trillion-dollar economy status, our cement production capacity must reach 900 million tonnes and 1200 kgs of per capita consumption. He also complimented cement industry for working on the concept of a circular economy and for utilizing plastic waste. He thanked cement industry for their huge contribution to nation building, working towards sustainability and towards using alternate fuels. He was of the opinion that Modern India cannot be built without cement and the very foundation of the country's future lies in this industry and cement manufacturers. He also called upon the industry to take meaningful steps for providing employment opportunities to Divyang's and extend all social security benefits such as ESIC, pension etc. to its employees who are engaged on contractual basis in their respective organizations.

Two well attended panel discussions on relevant topics "Changing Climate - A threat or opportunity for cement industry" and "Cement and construction Industry- A Convergence point of circular economy" were also organized on the first day of the seminar. The seminar also had three keynote presentations from eminent speakers like Dr. A K Chatterjee, Prof Ravindra Gettu and Dr. Dhanada Kanta Mishra which gave good insights on Emerging Technological Options for Improving the Application Potential of Blended Cements, Sustainability Assessment of Concrete Systems with Alternate Binders and Smart Cement-Based Composites respectively. During the four days of the seminar, the technical deliberations comprised of about 193 presentations in 24 technical sessions covering wide spectrum of themes relating to cement, concrete and construction sectors. 78 leading equipment manufacturers and service providers also showcased their technological prowess, new products and services in a Technical Exhibition, concurrent with the seminar.

As head of NCB, I thank all the sponsors, delegates, participants of panel discussions, keynote speakers and exhibitors for their continued patronage to the NCB Seminar. I thank the administration at Manekshaw Center for their unending and rock-solid support, which we always get from our brave soldiers, the pride of our nation. Lastly, I thank the Organising Committee of the seminar who have left no stone unturned towards successful completion of the seminar.

I sincerely do hope that all the participants would have reaped substantial benefits from this platform, which is gaining strength and shall continue to do so in times to come. I, once again wish all the readers, a Happy New Year 2020 and a very innovative and successful future. Jai Hind!



Dr. B N MOHAPATRA

NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS

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

34 KM STONE, DELHI-MATHURA ROAD, BALLABGARH-121004, HARYANA. INDIA

Ph: +91-129-4192222 / 2242051 Fax: +91-129-2242100 E-mail: nccbm@ncbindia.com

Website: <http://www.ncbindia.com>

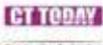
“The Greatest threat to our planet is the belief that someone else will save it.”



-Robert Swan



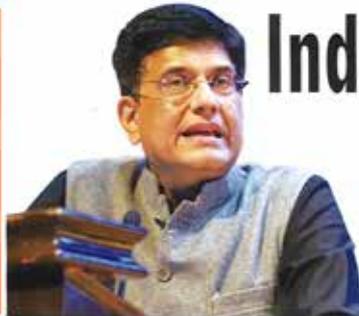
NCB team with Shri Shashank Priya, Additional Secretary and Financial Advisor, DPIIT, Ministry of Commerce & Industry, Govt. of India, Shri Mahendra Singhi, Chairman-NCB and Dr B N Mohapatra, DG, NCB

SPONSORS	 16th NCB INTERNATIONAL SEMINAR ON CEMENT, CONCRETE AND BUILDING MATERIALS 03 – 06 December, 2019 New Delhi, India Clean & Green is Sustainable	SPONSORS
CHIEF PATRONS		PATRON
 Dalmia Cement (Bharat) Ltd.  UltraTech Cement Ltd.		 KJS Cement (I) Ltd.
PLATINUM SPONSOR		GOLD SPONSORS
 Shree Cement Ltd.		 Ghorahi Cement Industry Pvt. Ltd., Nepal  JSW Cement Ltd.  Star Cement Ltd.  Saurashtra Cement Ltd. & Gujarat Sidhee Cement Ltd.
SILVER SPONSORS		BRONZE SPONSORS
 JK Lakshmi Cement Ltd.  J K Cement Ltd.  My Home Industries Pvt. Ltd.  The India Cements Ltd.		 Prism Johnson Ltd.  Calderys India Refractories Ltd
OTHER SPONSOR		OTHER SPONSOR
 Birla Corporation Limited		 KHD Humboldt Wedag India Pvt Ltd.
SUPPORTING ORGANISATIONS		MEDIA PARTNERS
 Department for Promotion of Industry and Internal Trade Govt. of India  Bureau of Energy Efficiency Govt. of India  Bureau of Indian Standards  Council of Scientific & Industrial Research, Govt. of India  Cement Manufacturer's Association  Central Pollution Control Board	 CT TODAY  INDUSTRIAL ANGLES  CEMENT REVIEW  WORLD CEMENT  CEMENTREVIEW 30  THE MASTERBUILDER  ZKC INTERNATIONAL  ICJ	

www.ncbseminar.com www.ncbindia.com

Modern India cannot be built without cement and the very foundation of the country's future lies in this industry.

- Piyush Goyal



India should be a Leader, not a Follower...

Let's look at a futuristic agenda, something which the world has not thought of.

INDUSTRY SPEAK



The topics discussed in different sessions were very interesting and touched the key issues of the cement sector. I realized how important it is for all stakeholders, especially the public and private sectors, to work together to provide solutions to the difficulties encountered in the sector. The people I met were great; everyone added something to my knowledge."

— Dr. A K Chattarjee

"This seminar was very helpful and educative. It has given me the opportunity to interact and exchange ideas with development partners, the private sector, and industry players and learn about blending formulations and equipment."

— Bhaskar Bhattacharya, President & Unit Head of Biria Corporation, Satna



It is a great honor for me to attend the NCB seminar. It is my first participation in this event. I congratulate entire team of NCB for well organized event. I think NCB Seminar is a great platform to interact with counterparts from Cement Industry all over India.

— Pawan Ahluwalia, Vice Chairman KIS Cement



"This is one of the best seminar I have attended in my working life. It was inspiring."

— V. N. Kabadi, Patron Industrial Angles



I took part in the 16th NCB seminar. I would like to thank you for the wonderful conference organized.

— Anil Counto, Alcon Group, Goa

I understand that 16th NCB International Seminar on Cement, Concrete and Building Materials is being attended by more than 1200 delegates from 21 Countries. 80 exhibitors are participating in Technical exhibitions to display their products and systems related to Cement. 25 different sessions with 200 papers will be covering all aspects of Cement, Concrete and Building Materials. This, in fact is a mega event which takes place after every two years and this time it has gained strength with larger participation from National and International Community. I wish to congratulate NCB for arranging such an important event successfully. I am sure that all participants shall be benefitted in terms of technical contents of the papers and by increasing their knowledge on various aspects of Cement Manufacture and Building Materials thereof. The thrust on Low Carbon foot prints and energy saving technologies shall be of special interest to me in this Seminar.



Ashok Kumar Dembla President & Managing Director Humboldt Wedag India

Congratulations to you & your team for organizing grand successful 16th NCB International Seminar..... this seminar was amazing & fantastic in all respect...

-Dr Awadhesh K Singh, UltraTech Cement

Kudos to you and your entire team for organizing such magnificent event in most systematic manner...

Sr Executive, UltraTech Cement Ltd

I express my gratitude for meticulous planning for this 'CEMENT KUMBH' wherein technologists, users, equipment manufacturers, researchers and students converge to share the developments, pain areas with its solutions, emerging trends and sustainability drives....
Shri Manish Singh, Sr VP (Tech), Prism Johnson Ltd

This programme can be rated as best, which may be because of your industry experience and influence....

Dr. Anil Kumar Trivedi, Shree Cement Ltd

Heartiest congratulations to you and your entire team for such a well-organized technical seminar, which was truly fantastic, insightful and had provided valuable technical information...

Dr. Manish Karandikar, Vice President -RMPD, ACC Ltd.

“We do not inherit the Earth from our ancestors; we borrow it from our children.”



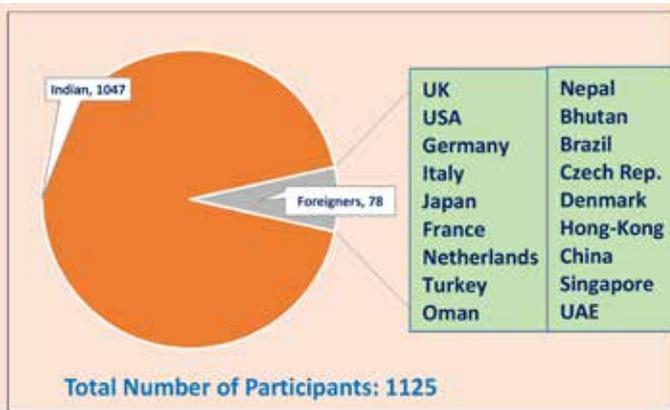
-Anonymous

16th NCB International Seminar on Cement, Concrete and Building Materials

The 16th NCB International Seminar on Cement, Concrete and Building Materials was held from 03 - 06 December 2019 at Manekshaw Centre, Parade Road, New Delhi. In order to emphasize the importance of concept of circular economy, climate change and sustainability, the theme of this year's seminar was chosen as **“Clean and Green is Sustainable”**.



Manekshaw Centre



Participation in the 16th NCB International Seminar



Registration Statistics of the 16th NCB International Seminar



Inauguration of seminar by lamp lighting



Release of Seminar Proceedings



Inauguration of Technical Exhibition

The 16th NCB International seminar & Technical Exhibition was inaugurated by Dr Guruprasad Mohapatra, Secretary, DPIIT, Ministry of Commerce and Industry, Govt. of India along with Shri Anil Agrawal, Joint Secretary, DPIIT, Shri Mahendra Singhi, Chairman-NCB, President - Cement Manufacturers' Association and MD & CEO, Dalmia Cement (B) Ltd.; Shri K K Maheshwari, MD, UltraTech Cement Ltd.; Dr B N Mohapatra, Director General-NCB and Dr S K Chaturvedi, Organising Secretary, 16th NCB International Seminar. The Seminar Proceedings were also released during the inaugural session.



During his welcome address, Dr B N Mohapatra spoke about the technology perspective of cement industry. He shared the progress on NCB's research activities in high MgO clinker, new clinker with modified chemistry & mineralogy using low grade limestone, development of limestone-fly ash based composite cement system, feasibility of

using low grade limestone, dolomitic limestone along with cement grade limestone in development of Portland Limestone Cement, investigations on improving reactivity of non-conforming fly ash, enhancing use of fly ash in PPC beyond BIS limit, various studies on utilization of industrial waste & by-products such as copper slag, lead-zinc slag, jarosite, red mud, barium sludge, SPL waste, E-catalytic waste, leather sludge & marble dust as raw material or as a mineralizer in production of clinker.

Shri Mahendra Singhi in his inaugural speech stated that NCB Seminars have been helping in imparting knowledge, demonstrating innovations and delivering the best in the cement industry. He emphasized that collective knowledge gathered in NCB seminar has made the Indian Cement Industry, future ready. He made important points on achievements of cement industry, efforts of the industry in turning challenges to opportunities, emerging challenges and policy interventions required from government.



After complimenting NCB for its services to the cement sector, Sh K K Maheshwari informed that Indian cement industry has been at forefront of sustainability. It has been working on four principles of sustainability viz. continuous improvement of environmental profile by reducing emissions and becoming more energy efficient; principle of what is good for environment is also good for business; earning the right to operate

from society; and the belief to take the society along with the industry. He stated that alternate fuels account for 4 to 5 % of total energy consumption and offer huge opportunity for industry in close partnership with government. He told that cement industry has been practising circular economy and has also been at forefront of renewable energy.

In his speech, Shri Anil Agrawal, Joint Secretary, DPIIT, shared information about the government initiatives like Bharatmala & Sagarmala project, building of railway lines & smart cities, investments made in industrial corridors and "Housing for All" scheme. He complimented the industry for participation in "Swachhata Hi Sewa" campaign in which cement plants lifted 7000 tonnes of plastic waste from Urban Local Bodies in 30 days and expressed happiness on partnership of cement industry with DPIIT in waste consumption.



After congratulating NCB for its services provided to the industry, Chief Guest of the session, Dr Guruprasad Mohapatra, Secretary, DPIIT, viewed that Indian cement industry is a vital part of economy employing a million people directly or indirectly. The gap in cement consumption of 240 kg per capita as against global average of 530 kg shows a huge potential for cement demand. He hoped that the government's recent initiatives like reduction in corporate tax would provide boost

for adding capacity and increasing existing capacity utilization. He viewed that to make India a 5 trillion-dollar economy by 2025, cement industry's role is crucial for developing infrastructure and increasing exports. He complimented the industry for "Swachhata Hi Sewa" campaign, asked the industry to adopt the international best practices for increasing alternate fuel utilization and assured that the government is willing to make effective policies for solving logistic issues.

“I only feel angry when I see waste. When I see people throwing away things we could use.”



– Mother Teresa

PANEL DISCUSSIONS

Panel Discussion on Changing Climate – A threat or opportunity for cement industry: The first panel discussion was moderated by **Shri Sumit Bannerjee**, Chairman, Editorial Advisory Board, Indian Cement Review and the distinguished panelists were: **Shri Mahendra Singhi**, Chairman NCB, President – Cement Manufacturers’ Association, MD & CEO– Dalmia Cement (B) Ltd., **Shri Vivek Agrawal**, Group Executive President & Chief Marketing Officer, UltraTech Cement Ltd., **Shri Bimlendra Jha**, MD & CEO, Ambuja Cement Ltd., **Shri Rajnish Kapur**, Business Head, J K Cement Ltd. and **Shri V S Narang**, Director (Technical), My Home Industries



Shri Sumit Bannerjee moderated the first panel discussion and expressed concerns by mentioning that global cement industry generates 7 to 8 % of total anthropogenic emissions. Shri Bimlendra Jha proposed a concept of Green Coin on the lines of Bitcoin. He told that a block chain based concept of Green Coin embedded with research on utilization of industrial waste can be promoted and green coins can be generated. Shri Mahendra Singhi stated that low carbon footprint is not

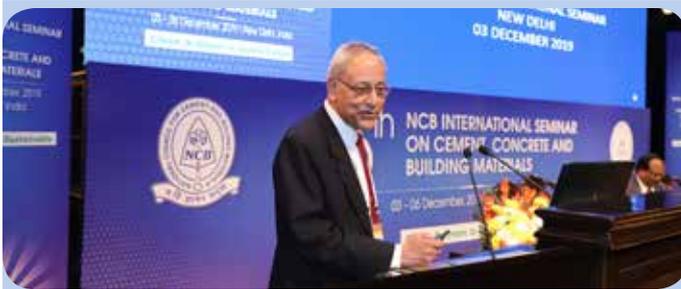
only sustainable but also profitable as it brings down variable cost. He added that five Indian cement companies are in the top ten list of lowest CO₂ emissions in cement production prepared by CDP. Shri Vivek Agrawal highlighted that US and China are ahead of India by 10 and 5 times respectively in terms of per capita emissions. He vouched for a differentiated responsibility and told that voluntarily, India has taken a call to reduce CO₂ emissions by 35%. He stated that the Indian Cement industry is water positive and plastic positive. Dr V S Narang called upon cement companies to not depend upon the technology and finances from developed countries and supported the idea of cement companies looking forward for going on their own towards reducing carbon footprint of cement industry. Shri Rajnish Kapur expressed his concerns on huge depletion of resources due to high consumption and discussed various levers to reduce carbon footprint. He focussed on the challenge of MSW generation in urban centres and its dumping in land dumps. He also complimented Indian Cement industry for implementing the new stringent emission norms for PM, SO₂ and NO_x.

Panel Discussion on Cement and construction Industry- A Convergence point of circular economy: The second panel discussion on circular economy was moderated by Shri Sujeet Samaddar, Former Senior Consultant, Niti Aayog and the distinguished panelists were: **Dr D K Aswal**, Director, CSIR-NPL, **Shri Sanjay Pant**, Head – Civil Engineering Department, BIS, **Shri Sunil Gupta**, CEO, KJS Cement Ltd, **Shri Arpan Gupta**, Dy. Director & Head-Mines, Metals & Cement Division, FICCI, **Shri K S Venkatagiri**, Executive Director-GBC, CII, **Dr Mukesh Kumar**, Director, Steel Research and Technology Mission of India

Shri Sanjay Pant stated that various research carried out at NCB’s for example on copper slag, steel slag, catalytic slag, C&D waste, use of bottom ash, use of sintered fly ash aggregates, have been incorporated in the standards. He informed that today, we have standards which permit 10 types of waste in concrete and use of SCMs as part replacement of cement. He added that today we have scarcity of aggregates in the country due to ban on mining, ban on sand mining so NCB’s research for alternates of coarse and fine aggregates, many wastes have been permitted in aggregate standards also. He informed that BIS is also going to shortly release a new standard IS 17000 on sustainable development of habitats. He further added that the entire concept of sustainability has been built in the National Building Code 2016 of India and certain alternate regime needs to be brought for testing of alternate materials. Shri Mukesh Kumar stated that cement industry is the best practitioner of the circular economy and added that socio environment conflicts can be avoided if circular economy is practised in India. Shri Arpan Gupta highlighted that for circular economy the facilitation is required to be provided by government in terms of proper regulatory policy. Shri K S Venkatagiri congratulated NCB and the cement industry for the work done by cement industry in terms of resource efficiency, improving energy efficiency.



KEYNOTE PRESENTATIONS



Emerging Technological Options for Improving the Application Potential of Blended Cements by Dr A K Chatterjee:

Dr Chatterjee highlighted that the production of blended cements, where Portland clinker is substituted with large quantities of Supplementary Cementitious Materials (SCMs) is one of the most viable approach to reduce carbon footprint during cement production. At present, the clinker substitution has contributed, on an average, to

a 20-30% decrease in CO₂ emissions, per tonne of cement produced with reference to the levels prevailing in 1980s. Improving the reactivity of SCMs through their processing has not shown the desired results of achieving the clinker factor targeted in the road map. In development of low clinker factor blended Portland cements, the early age properties of cement are one of the main issues. Use of chemical admixtures have opened up the greater opportunities of enhancing the clinker substitution with different SCMs. Two important additive technologies designed to influence the reaction and hydration kinetics of cement are; Tri-IsoPropanolAmine (TIPA) and DiEthanol-IsoPropanolAmine (DEIPA). Use of minor additional constituents, such as micro-silica, white-lime hydrates, calcium sulfo-aluminate, calcium langbeinite, etc. has been other options for improving the early ages performance. But, studies on nano-additives in cement systems provide an effective solution by synthesizing nucleating agents to enhanced hydration with C-S-H precipitates. The multicomponent system of Portland cement-SCM-filler-aggregates-chemical admixture-water has enormous space and provides unending opportunities of manipulating its hydration and performance characteristics.

Sustainability Assessment of Concrete Systems with Alternate Binders by Prof Ravindra Gettu:

Dr Gettu highlighted that blended cements with low Portland cement clinker content can reduce the carbon footprint of concrete drastically. Recent studies have shown that limestone Calcined Clay is a promising clinker substitute (Limestone Calcined Clay Cement, LC³) and demonstrating its technical feasibility and advantages. The paper highlighted the impact assessment for concrete with LC³, as well as that of more conventional Ordinary Portland Cement (OPC), Portland Slag Cement (PSC) and fly ash-based Portland Pozzolana Cement (PPC). A new set of indicators called A-indices have been proposed for combining the influence of CO₂ emissions and durability factors that relate to the service life of a structure. The best concretes considered here come out as those with higher replacement level of SCMs, i.e. with ternary binders having 40% of OPC replaced by a combination of slag and fly ash, 50% slag and LC³ systems.



Smart Cement-Based Composites by Dr Dhanada Kanta Mishra:

Dr Mishra highlighted that use of smart cement-based composites is becoming increasingly critical for enhanced durability and serviceability of structures. In addition, self-sensing and self-healing cement-based materials have been subject of increasing research interest. Designing for serviceability based on durability performance of the materials



used in concrete structures is often neglected. With durability performance testing becoming more sophisticated, detailed service life design is being demanded in most important infrastructure projects. The present review is focused on identifying field applications and highlighting the Performance Driven Design Approach (PDDA) for tailoring material solutions for the problems likely to be faced by the civil engineering infrastructure of the future. One of the real-life case studies illustrates the minimal cost implications of adopting latest smart material for a much eco-friendlier, durable, reliable and safe infrastructure. Identifying critical challenges faced by the industry and developing solutions for the same is going to help bridge the gap between research and adoption.

“The environment is everything that isn’t me.”



– Albert Einstein

SPECIAL SESSION

Release of 2nd Edition of Compendium “The Cement Industry – India 2019” by Hon’ble Minister of Railways and Commerce & Industry, Shri Piyush Goyal: The compendium was published by NCB in association with DPIIT, Ministry of Commerce & Industry. It contains information on status of Indian Cement Industry and its profile, key issues/challenges related to raw materials, energy efficiency, environment concerns and an exhaustive directory of cement plants in India.



Address by Hon’ble Minister: At the onset, he congratulated NCB for organizing 16th NCB International seminar with a relevant theme of “**Clean and Green is Sustainable**” and all the winners of National Awards on Energy, Environment and Total Quality Excellence. He noted that there exists a huge gap between China and India, both in demand and production. He highlighted that Indian economy cannot reach 10 trillion-dollar economy status until cement production capacity reaches 900 million tonnes and 1200 kgs of per capita consumption. He complimented cement industry for working on the concept of a circular economy and for utilizing plastic waste. He called upon the industry to provide employment opportunities to Divyang’s and extend all social security benefits ESIC, pension etc. to its employees who are engaged on contractual basis. He thanked cement industry for their huge contribution to nation building, working towards sustainability and towards using alternate fuels. He also complimented cement industry for setting various targets to become a sustainable industry. He was of the opinion that Modern India cannot be built without cement and the very foundation of the country’s future lies in this industry.

Distribution of National Awards by Hon’ble Minister: The scheme of National Awards for Energy Efficiency started from 1986-87 and since then, these awards are being given regularly to the best performing cement plants. The objective of energy efficiency awards is to motivate competitive improvement in energy performance and improve energy consciousness by giving recognition to the efforts for realization of lower energy consumption levels. In view of the growing importance of environmental protection and quality standards, two more categories of awards were instituted from 2000-2001. National Awards for Energy Efficiency, Environmental Excellence and Total Quality Excellence in Indian Cement Industry have played a catalytic role in achieving excellence through competitive improvement in performance. Cement plants have achieved best levels of 671 kcal/kg of clinker in thermal energy and 63.9 kWh/tonne of cement in electrical energy comparable to the best reported figures of 660 kcal/kg of clinker and 65 kWh/t of cement in other developed countries such as Japan.



LIST OF RECIPIENTS

S.N	CATEGORY	2017-18	2018-19
NATIONAL AWARDS FOR ENERGY EFFICIENCY			
1	Best Thermal Energy Performance	Ultratech Cement Ltd.(Unit – Vikram Cement Works, Line 2), Neemuch, MP	RCCPL Private Limited Maihar, MP
2	Best Electrical Energy Performance	Dalmia Cement (Bharat) Ltd.Ariyalur, TN	Dalmia Cement (Bharat) Ltd. Ariyalur, TN
3	Best Improvement in Thermal Energy Performance	J K Cement Works, Muddapur, Karnataka	RCCPL Private Limited, Maihar, MP
4	Second Best Improvement in Thermal Energy Performance	The Ramco Cements Ltd., Virudhunagar, TN	Dalmia Cement (Bharat) Ltd. Kadapa, Andhra Pradesh
5	Best Improvement in Electrical Energy Performance	J K Cement Works, Muddapur, Karnataka	Chandaria Cement Works, Chittorgarh, Rajasthan
6	Second Best Improvement in Electrical Energy Performance	Ultratech Cement Ltd.(Unit – Vikram Cement Works, Line 2), Neemuch, MP	J K Cement Works, Muddapur, Karnataka
7	Best Improvement in Energy Performance in Manufacture of Blended Cements	Ultratech Cement Ltd.(Unit – Vikram Cement Works, Line 2), Neemuch, MP	J K Cement Works, Muddapur,Karnataka
NATIONAL AWARDS FOR ENVIRONMENTAL EXCELLENCE			
1	Best Environmental Excellence in Cement Plants	J K Cement Works, Muddapur,Karnataka	J K Cement Works, Muddapur,Karnataka
2	Second Best Environmental Excellence in Cement Plants	J K Lakshmi Cement, Sirohi, Rajasthan	J K Lakshmi Cement, Sirohi, Rajasthan
3	Best Environmental Excellence in Limestone Mines	The Ramco Cements Ltd., Alathiyur Works, Ariyalur, TN	Dalmia Cement (Bharat) Ltd. Dalmiapuram, Trichy, TN
4	Second Best Environmental Excellence in Limestone Mines	Dalmia Cement (Bharat) Ltd., Dalmiapuram, Trichy, TN	The Ramco Cements Ltd., Alathiyur Works, Ariyalur, TN
NATIONAL AWARDS FOR TOTAL QUALITY EXCELLENCE			
1	Best Total Quality Excellence	Shree Cement Ltd., Beawar, Ajmer, Rajasthan	Shree Cement Ltd., Beawar, Ajmer, Rajasthan
2	Second Best Total Quality Excellence	Ultratech Cement Ltd. (Unit – Vikram Cement Works), Neemuch, MP	Ultratech Cement Ltd. (Unit – Awarpur Cement Works), Chandrapur, Maharashtra

“God gave us the earth, to till and to keep in a balanced and respectful way.”



- Pope Francis

TECHNICAL SESSIONS

More than 193 papers were presented in 24 technical sessions including one special session for students. The Technical Sessions were based on specific themes like: Raw Material Resource Management, Portland, Blended & Special Cements, Alternate / Waste Fuels & Raw Materials, Plant Machinery & Project Engineering, Productivity Enhancement & Process Optimization, Energy Conservation, Performance & Durability of Concrete, Concrete Deterioration Mechanisms & Advanced Concrete System, Advances in Grinding Systems, Emerging Trends, Total Quality Management, Refractory Management & Process Optimization, Analytical Methods & Lab Automation, Smart & High Performance Concrete, Environmental Management & Sustainable Development, Distress Investigation, Repair/ Strengthening/ Retrofitting of Concrete Structures, Sustainable Construction Practices & Other Building Material & Binders.

SESSION IA: RAW MATERIAL RESOURCE MANAGEMENT

Chairman : Sh Raju Goyal, Chief Technical Officer, UltraTech Cement Ltd.

Co-Chairman : Sh U R Raju, Executive Director, Dalmia Cement (B) Ltd.



SESSION I B: PORTLAND, BLENDED AND SPECIAL CEMENTS – I

Chairman: Shri Manoj Kumar Jha, Senior President, Prism Johnson Ltd.

Co-Chairman: Sh K. Vinayagamurthi, Unit Head – Dalmiapuram Unit, Dalmia Cement (B) Ltd.



SESSION II A: ALTERNATE / WASTE FUELS AND RAW MATERIALS

Chairman : Shri Sunil Mahajan, Group Manufacturing Head, Dalmia Cement (B) Ltd.

Co-Chairman : Sh Ulhas Parlikar, Global Consultant – AFR



SESSION II B: PORTLAND, BLENDED AND SPECIAL CEMENTS – II

Chairman : Dr A K Singh, Sr VP, Head-Product Assurance & Services, UltraTech Cement Ltd

Co-Chairman : Dr Manish V Karandikar, Vice President –RMPD, ACC Ltd.



SESSION III A: ADVANCES IN GRINDING SYSTEMS-I

Chairman: Sh Dinesh G Randad, Director (Works), Gujarat Sidhee Cement Ltd
 Co-Chairman : Shri Manish Kumar, Sr VP, Prism Johnson Ltd.



SESSION III B: EMERGING TRENDS – I

Chairman : Dr Sujith Ghosh, Executive Director, Dalmia Cement (B) Ltd.
 Co-Chairman: Ms Lopamudra Sengupta , Technical Services Head, JSW Cement Ltd



SESSION IV A: CEMENT PLANT MACHINERY AND PROJECT ENGINEERING

Chairman: Shri A K Dembla, President & MD, Humboldt Wedag India Pvt Ltd
 Co-Chairman : Sh S P Shrimali, Unit Head, Star Cement Ltd



SESSION IV B: EMERGING TRENDS- II

Chairman : Shri Sunil Gupta, CEO, KJS Cement Ltd
 Co-Chairman : Shri Rahul Goel, Sr General Manager, UltraTech Cement Ltd



SESSION V A: PRODUCTIVITY ENHANCEMENT AND PROCESS OPTIMIZATION

Chairman: Shri S K Rathore, Unit Head-Nimbahera, Mangrol, J K Cement Ltd
 Co-Chairman: Shri Sanjay Jain, Dy Executive Director –Technical Services, Dalmia Cement (B) Ltd.



“The future will be green, or not at all.”



– Jonathon Porritt

SESSION V B: TOTAL QUALITY MANAGEMENT

Chairman : Shri Vivek Agnihotri, Executive Director & CEO, Prism Johnson Cement
Co-Chairman: Dr Bhibhuti Das, Associate Professor, NIT Karnataka



SESSION VI A: REFRACTORY MANAGEMENT AND PROCESS OPTIMIZATION

Chairman: Shri D Muruganandam, President (Operations), The India Cements Ltd
Co-Chairman: Shri Alok Nagar, Director-Industrial Sales & Marketing, Calderys India Refractories Ltd



SESSION VI B: ANALYTICAL METHODS AND LAB AUTOMATION

Chairman : Dr K Mohan, Former DG, NCB
Co-Chairman : Dr L P Singh Principal Scientist , CBRI-Roorkee



SESSION VII A: ENERGY CONSERVATION SYSTEMS-I

Chairman: Shri Philip Mathews, Head, Technical Services, ACC Ltd
Co-Chairman: Shri Vinay Kapil, Executive Director-Power Plant-Boiler, Dalmia Cement (B) Ltd.



SESSION VII-B: SMART CONCRETE/ HIGH PERFORMANCE CONCRETE

Chairman : Dr V Ramachandra, Head Technical Services, Ultratech Cement Ltd
Co-Chairman: Dr. S K Singh , Sr. Principal Scientist, CBRI-Roorkee



SESSION VIII-A: ADVANCES IN GRINDING SYSTEMS-II

Chairman: Shri Bhaskar Bhattacharya, President & Unit Head, Birla Corp
 Co-Chairman: Shri Ashwin K Raykundalia, Unit Head – Rabariyawas, Ambuja Cements



SESSION VIII-B: PERFORMANCE AND DURABILITY OF CONCRETE-I

Chairman: Dr BRK Pillai, Commissioner-CAD, Ministry of Water Resources & Ganga Rejuvenation
 Co-Chairman : Dr Shashank Bishnoi, Associate Professor, IIT Delhi



SESSION IX A: ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT-I

Chairman : Shri Ashwani Pahuja, Executive Director & CSO, Dalmia Cement (B) Ltd.
 Co-Chairman: Dr Anil Trivedi, Head (Environment & Sustainability), Shree Cement



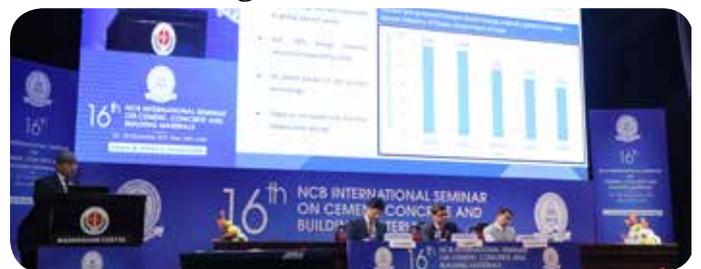
SESSION IX B: DISTRESS INVESTIGATION, REPAIR/ STRENGTHENING/ RETROFITTING OF CONCRETE STRUCTURES

Chairman : Dr Sujith Ghosh, Executive Director, Dalmia Cement (B) Ltd.
 Co-Chairman: Shri Shashi Gaggar, Vice President, Ultratech Cement Ltd.



SESSION X A: ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT-II

Chairman : Shri B P Thapliyal, Director, CPPRI Sahranpur
 Co-Chairman : Dr Anand K Rai, General Manager, JSW Steel



“The Earth does not belong to us , we belong to the Earth.”



– Marlee Matlin

SESSION XI-A: ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT-III

Chairman : Shri Pankaj Kejriwal, Executive Director, Star Cement Ltd
Co-Chairman : Dr Mukesh Kumar, Head, R&D, J K Lakshmi Cement Ltd.



SESSION XI- B: PERFORMANCE AND DURABILITY OF CONCRETE-II

Chairman: Prof. Manu Santhanam, Professor, IIT Madras
Co-Chairman : Shri A K Tiwari, Vice President, Ultratech Cement Ltd.



Session XII A: ENERGY CONSERVATION SYSTEMS-II

Chairman : Shri S V P Gupta, Executive Director, Ghorahi Cement
Co-Chairman : Shri J S Kalra, Part Time Sectoral Expert (Cement), BEE



Session XII B: SUSTAINABLE CONSTRUCTION PRACTICES AND OTHER BUILDING MATERIALS AND BINDERS

Chairman: Prof B Bhattacharjee, IIT Delhi
Co-Chairman: Dr S K Singh, Senior Principal Scientist, CBRI Roorkee



SPECIAL SESSION FOR STUDENTS

With the motive to increase the industry and academia interaction and to encourage the students and create awareness amongst them, a special session for students was organized in which papers were presented by students of reputed colleges like IIT Delhi, BITS Pilani, NIT Karnataka etc. Certificates of Participation were given to all students who presented their paper. Also, one of the selected paper was awarded as paper of High Merit in the concluding session.

SESSION XB: SPECIAL SESSION FOR STUDENTS

Chairman: Dr Subrato Chowdhury, Principal Associate, Conmat Technologies
Co-Chairman: Professor G C Mishra, Professor, A K S University



“Climate change is a terrible problem and it absolutely needs to be solved.”



– Bill Gates

CULTURAL PROGRAM



TECHNICAL EXHIBITION

The seminar also had a Technical Exhibition, which was held concurrently at the seminar venue. The exhibition gave additional exposure to the latest available technologies and services for efficient operation of cement plants, making of concrete and construction activities.



“We have to move towards zero-defect and zero-effect. Zero defect in production with no adverse effect on environment.”



– Narendra Modi

CONCLUDING SESSION

The concluding session was held on 06th December 2019 and graced by Chief Guest Shri Shashank Priya, Additional Secretary and Financial Advisor, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, Govt. of India along with Shri Mahendra Singhi, Chairman-NCB, President – Cement Manufacturers’ Association and MD & CEO, Dalmia Cement (B) Ltd.; Dr B N Mohapatra, Director General-NCB and Dr S K Chaturvedi, Organising Secretary, 16th NCB International Seminar.

Release of NCCBM Newsletter: The first edition of NCCBM newsletter was released by Shri Shashank Priya, Additional Secretary and Financial Advisor, DPIIT, Ministry of Commerce & Industry, Govt. of India during the session. The newsletter included a glimpse of NCB team and its R&D activities.



Awards for papers of High Merit: Out of the 193 papers presented in the 16th NCB International seminar in 24 technical sessions, 10 technical papers from the papers presented by delegates and 1 paper presented by student were selected as papers of high merit and were awarded.



Valedictory Address

In the concluding session, the Valedictory address was delivered by Shri Shashank Priya. He stated that NCB is doing seminal work and providing platform for bringing together the manufacturers of cement, academicians, scientists and manufacturers of plant machinery. He also said that NCB is bringing needs of research and its practical applications together and expressed confidence that it will take the industry forward. He said that it is heartening to know that the industry has taken initiatives to become a leader in low carbon technology. He added that use of industrial waste will make industry not only competitive but will also reduce its carbon footprint. He told that the next level of growth for Indian cement industry has to come by becoming global leader in export of high quality and cost effective cement. He noted that the feedback from the industry regarding the seminar has been phenomenal and delegates had a rich learning experience. He congratulated the recipients of papers of high merit of seminar. He also congratulated NCB for organizing the seminar successfully.



BEST PAPER AWARDS

Out of the 193 papers presented, 10 papers by delegates and 1 paper by student were selected as papers of high merit and were awarded in the concluding session. A four-member jury was formed which elaborated on papers and marks were given by Chairman & Co-Chairman to each and every paper to arrive at the result.

S.NO.	Papers Selected
Paper of High Merit for Students	
1	Performance of Optimized Binary and Ternary Blended Composites Integrated with Fly Ash, Ultra-Fine Fly Ash and Nano Silica by Snehal K and B B Das, National Institute of Technology Karnataka Surathkal, India
Papers of High Merit for Delegates	
1	Cost Saving by Optimization/uses of Overburden Limestone of Mines in Clinkerization Without affecting the Clinker Quality by Pankaj Kejriwal, S P Shrimali, Y K Singh, S K Pandey and Sanjay Chourasia, Star Cement, India
2	High Magnesia (MgO) Clinker for the Manufacture of PPC and PSC by B N Mohapatra, G Ahamed, G J Naidu, Suresh Palla, G Bhatnagar and S K Chaturvedi, National Council for Cement and Building Materials, India
3	Pyro Process: Approach for Low Carbon Roadmap by Jens Breidenbach and Andreas Hand, KHD Humboldt Wedag, Cologne, Germany, Anurag Johari, Humboldt Wedag India Pvt Ltd, India
4	Modification of Cement Mill Bag House Purging Sequence & Increased The PPC Output by 10% by A V N S Murthy, T Robert and M Narsi Reddy, Dalmia Cement (Bharat) Ltd, India
5	Improvising Logistics and Supply Chain in Cement Industry by Ravindra Kumar Singh, BEUMER India Pvt Ltd, India
6	The Influence of Chemical and Mineralogical Variability on the Grinding Behaviour of Limestone by A Sadangi, M Kuchya, A K Singh, K Suresh and Raju Goyal, UltraTech Cement Ltd, India
7	Guinness World Record- Largest Grinding VRM: OK™ 81-6 MILL by A Janardhanan and John Terembula, FLSmidth Pvt Ltd, India
8	Stress Strain Characteristics of High Strength Concrete with Steel Fibers using Blended Cements by Brijesh Singh, V V Arora, Vikas Patel, Amit Trivedi and Megha Kalra, National Council for Cement and Building Materials, India
9	Effect of Calcination Characteristics of China Clays on the Performance of Limestone-calcined Clay Cements Containing Different Grades Limestone by Jai Prakash Vрати, Kamal Virendra Singh, Ashwin K Raykundaliya and B C Pandey, Ambuja Cements Ltd, India S K Agarwal, S K Gupta, S K Chaturvedi and B N Mohapatra, National Council for Cement and Building Materials, India
10	NO _x Reduction Experiences in Kiln & CPPs of Cement Plant by Prem Talreja and Geet, YARA Environmental Technologies, India

“Green is the prime colour of the world and that from which its loveliness arises”.



– Pedro Calderon de la Barca

PAPERS PRESENTED BY NCB SCIENTISTS

Total 45 Nos. research and technical papers were presented by NCB Scientists and Engineers in the 16th Edition of NCB International seminar on Cement, Concrete & Building Materials. The papers presented from NCB covered key issues and challenges in cement industry and construction industry covering way forward in achieving low carbon cements for durable and sustainable infrastructure.

1. **Experimental shear study on reinforced high strength concrete beams-** VV Arora, Brijesh Singh, Vikas Patel, Amit Trivedi & Lalit Kumar
2. **Stress strain characteristics of high strength concrete with steel fibres using blended cements-** Brijesh Singh, V V Arora, Vikas Patel, Amit Trivedi & Megha Kalra
3. **Study on behavior of polypropylene fiber reinforced high strength concrete exposed to higher temperatures-** Vikas Patel, VV Arora, Brijesh Singh, Megha Kalra & Sahara Adhikari
4. **Importance of ISO: 17020 implementations for quality assurance system in construction industry-** Vikas Patel, B. Pandu Ranga Rao, Brijesh Singh & V.V. Arora
5. **Mechanical and durability properties of concrete made with ternary blends-** Puneet Kaura, V V Arora, Piyush Mittal
6. **Condition assessment & remedial measures for rehabilitation of induced draught cooling towers (IDCTs) located in different climatic regions of India-a case study-** Rizwan Anwar, TVG Reddy, Sanjay Mundra
7. **Experimental investigations on fiber reinforced self leveling pavement quality concrete (PQC) for use in partial depth repairs of cement concrete pavements in urban areas-** D. Pavan Kumar, J. Narsinga Rao, P N Ojha, B. Sreenivasa Rao, Adarsh Kumar NS
8. **Studies on fly ash and slag based geopolymer concrete-** Lalit Kumar, Amit Trivedi, VV Arora and Lopamudra Sengupta
9. **Performance evaluations of polymer modified mortar and bonding agent for structural repair-** Puneet Kaura, Y N Daniel, Nitesh Kumar & TVG Reddy
10. **Characteristics of Indian bottom ash and its feasibility for use as fine aggregate in reinforced concrete-** P N Ojha, Amit Trivedi, Suresh Kumar, Nikhil Kaushik, Digvijay Kumar & V.V. Arora
11. **Case studies on repair of concrete dam in Himalayan region using high performance concrete-** P N Ojha, Suresh Kumar, Digvijay Kumar & V V Arora
12. **Role of packing density, mixing efficiency and curing regime on development of UHPC-** P.N. Ojha, Abhishek Singh, Piyush Mittal, Brijesh Singh, V.V. Arora
13. **Laboratory test method for evaluating corrosion inhibiting efficiency of admix type bipolar corrosion inhibitor-** Puneet Kaura, P.N. Ojha, Piyush Mittal & V.V.Arora
14. **Experimental investigation of ferrochrome slag as aggregate in concrete-** P N Ojha, Amit Trivedi, Nikhil Kaushik, Vaibhav Chawla
15. **Comparative study of characteristics of opc-53 grade cement and its influence on water demand and rheological properties of concrete-** P.N. Ojha, G J Naidu, Suresh Palla & Piyush Mittal
16. **Design and construction of low traffic volume concrete roads using C&D aggregates and supplementary cementitious materials-** Vaibhav Chawla, Amit Trivedi, V.V. Arora
17. **Assessment of mechanical and mineralogical properties of concrete dams in India-** V V Arora, Brijesh Singh, Shubham Jain, Vikas Patel and Pramod Narayan
18. **Performance analysis of in-service rc members of turbo generator in India - a comparative study of service life assessment-** Sanjay Mundra, TVG Reddy, Naman Agarwal

19. **Impact of ammonia on environment due to its use for secondary NO_x control in cement plants-** Anand Bohra, Prateek Sharma, M Selvarajan, A Saxena and B N Mohapatra
20. **Assessment of SO₂ generation and mitigation measures at a cement plant in India – a case study-** Anand Bohra, K P K Reddy, K R P Nath, Anupam, A Saxena, B N Mohapatra, Pankaj Kejriwal, A. K. Sinha, S. P. Shrimali, S. K. Kulshrestha, Y.K.Singh, B.L. Suthar
21. **Handling of multi type alternative fuels: a challenge and opportunity for cement plant-** Kapil Kukreja, Anupam, Prateek Sharma, Saurabh Bhatnagar
22. **Best engineering practices: an important tool for attaining high and sustainable TSR-** M.V. Ramachandra Rao, Anupam, Anil K Popuri, Kapil Kukreja, Rayees Ahmed
23. **Energy and occupant comfort evaluation for building-** Kajol, Ankur Mittal, Ashutosh Saxena, Dr B N Mohapatra, Devinder Singh
24. **Assessment of compressor energy consumption in cement plant - a case study-** Ankur Mittal, Saurabh Bhatnagar, Ashutosh Saxena
25. **Role of captive power plants in achieving pat energy targets for Indian cement industry-** Prateek Sharma, Ankur Mittal, M. V. Ramchandra Rao, V. Venkatesh, Ashutosh Saxena and Dr B.N. Mohapatra
26. **Energy audit of waste heat recovery systems of cement plants in India: case studies-** Prateek Sharma, Ankur Mittal, M. V. Ramachandra Rao, KPK Reddy, Ashutosh Saxena and Dr B.N. Mohapatra
27. **Utilization and recovery methods of waste heat in cement plant-** Ankur Mittal, Ashutosh Saxena, Dr B N Mohapatra, Dr Dibakar Rakshit
28. **Conservation and Maximization of Limestone Reserves by adopting Suitable Mining Process (Case Studies)-** Richa Mazumder, Subrat Sahoo, A K Dubey, Dr D K Panda
29. **Utilization of leather sludge in cement manufacture-** D Yadav, S Palla, S Vanguri, G J Naidu, M Verma, S K Chaturvedi, Dr B N Mohapatra
30. **Investigations on improving the performance of composite cement by separate grinding of constituents-** Varsha Liju, G Ahamed, P Pandey, M Sharma, Dr S K Chaturvedi and Dr B N Mohapatra
31. **Investigation on utilization of wollastonite in manufacture of OPC clinker-** Dr Varsha Liju, S Sridhar, Mukesh Kumar, S K Saxena, Dr S K Chaturvedi and Dr B N Mohapatra
32. **Development of belite calcium sulpho-aluminate cement using low grade limestone and industrial waste (jarosite)-** B N Mohapatra, G J Naidu, Dr S Palla, S Vanguri, Dr V Liju and Dr S K Chaturvedi
33. **Improvement of ash quality through chemical / mineral doping in coal during its generation-** Dr S Palla, G J Naidu, S Vanguri, A Goyal, F Ahmad, Dr S K Chaturvedi and Dr B N Mohapatra
34. **Influence of fly ash fineness on its mechanical properties-** Suresh Vanguri, T Mohanrao, Suresh Palla, V Ramaswamy, K V Kalyani, Dr S K Chaturvedi and Dr B N Mohapatra
35. **Chemical composition and bond work index of limestone – correlation-** Suresh Vanguri, G Prasad, A Sushmitha, M Balaraju, G Jayaramudu, P Janardhan, V Rama and Dr S K Chaturvedi
36. **Use of de-carbonated material ‘LD slag’ in the manufacture of portland clinker-** S K Agarwal, Dr Varsha Liju, Dr S K Chaturvedi, Dr B N Mohapatra, Subhdra Sen, A K Gupta, Nabonita Das, R V Ramna
37. **Investigations on mechanical properties of portland limestone cements prepared using different grade limestone-** J P Vрати, K V Singh, A K Raykundalia, B C Pandey, S K Agarwal, R Singh, Dr S K Chaturvedi, Dr B N Mohapatra
38. **Investigations on development of portland composite cements based on flyash and limestone-** Dr B N Mohapatra, Dr Varsha Liju, Dr S Palla, S Vanguri, R Gupta, O P Sharma, Dr S K Chaturvedi

39. **High magnesia (MgO) clinker for the manufacture of PPC and PSC-** Dr B N Mohapatra, G Ahamed, G J Naidu, G Bhatnagar, Dr S K Chaturvedi
40. **Microstructural development in clinker phases while using waste marble dust powder as a raw mix component-** S K Gupta, S K Agarwal, Dr S K Chaturvedi, Dr B N Mohapatra, Megha Bansal
41. **Effect of LD slag on the physical performance of composite cement-** G Ahamed, Dr V Liju, P Sharma, Dr S K Chaturvedi, Dr B N Mohapatra
42. **Investigations on portland limestone cement compositions and their performance characteristics-** Dr Pinky Pandey, Dr D. Yadav, K Sharma, Dr S. K. Chaturvedi and Dr B. N. Mohapatra
43. **Development of BND – Indian certified reference materials for cement and cementitious materials to support national traceability-** Suresh Kumar Shaw, V Naga Kumar, Abhishek Agnihotri, P N Ojha
44. **Role of calibration in managing measurement risk and decision rule-** P Srikanth, R P Vijayvergia, P N Ojha
45. **Role of proficiency testing (PT) in the field of cement and building materials-** V Naga Kumar, Suresh Kumar Shaw, Abhishek Agnihotri, P N Ojha



 NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS (Under the Administrative Control of Ministry of Commerce & Industry, Govt. of India)		
Technical Support , Consultancy, Training and Testing Services to Cement, Concrete and Construction Industries		
Consultancy and testing services to industry	<ul style="list-style-type: none"> Limestone consumption factor studies Development of newer cement & alternate building products Raw materials evaluation and raw mix design Improving clinker / cement quality Utilization of industrial Wastes/ byproducts in cement manufacture Long term leaching studies 	
Cement Plant Consultancy Services	<ul style="list-style-type: none"> Diagnostic studies for coating and build ups, kiln shell corrosion, premature refractory failures Testing services (NABL and ISO 17025:2005) for cement, fly ash, pozzolanic materials, clinker, limestone, slags, gypsum, lime, clay, laterite, red ochre, raw meal, coal, sand, water for construction, tiles, paver block, refractory, etc. <p style="text-align: right;">(email: crtb@ncbindia.com, ncbcr2@gmail.com)</p>	
Cement Plant Consultancy Services	<ul style="list-style-type: none"> Energy Audit Kiln & Mill Optimization Use of Alternate Fuel Heat Balance Study 	
Computer-Aided Deposit Evaluation & Mine Planning (email : cme1b@ncbindia.com, ncbcme@gmail.com)		
Consultancy and Testing Services to Concrete and Construction Industry	<ul style="list-style-type: none"> Evaluation of Concrete Making Materials, Concrete Mix Designs, Development of Special Concrete and Advance Concrete Composites Durability Studies of Concrete, High strength concrete, High Performance Concrete Nondestructive Testing, Diagnostic Distress Investigations, Structural Assessment and Repair/ Rehabilitation/ Retrofitting Third Party Quality Assurance /Audit for Buildings, Roads, Bridges & Tunnels - ISO/IEC 17020:2012 accredited. Performance evaluation of corrosion inhibitors, permeability reducing admixtures etc. <p style="text-align: right;">(email: cdrb@ncbindia.com)</p>	
Calibration, Reference Materials, Proficiency Testing (PT) & Other Quality Related Services	Calibration Services (Accredited as per ISO 17025:2005) Glassware, CTM/ UTM, Pressure gauge, Test sieve, Dial gauge, Vernier caliper, Steel scale, Measuring Tape, Thermometer, RTD, Thermocouple, Hot Air Oven, Muffle Furnace, Tachometer, Mortar vibrating machine, Blaine's cell, Flow table, Weighing balance, weights <p style="text-align: right;">(email: ncb.cqc@gmail.com)</p>	
	Certified Reference Materials (Physical and Chemical Parameters) Cement, Fly ash, Clinker, Limestone, Granulated Slag, Gypsum, Hydrated lime, Clay, Laterite, Red ochre, Raw meal, Coal, Sand and Flow Table Calibration mixture. <p style="text-align: right;">(email : cqcb@ncbindia.com)</p>	
	Proficiency Testing (PT) Tiles, Concrete Admixture, Steel bar, Building brick etc.	PT (Accredited as per ISO 17043:2010) Cement, Clinker, Fly ash, Limestone, Coal/ Pet coke, Water, Aggregate <p style="text-align: right;">(email: ncb.cqc@gmail.com)</p>
	Total Quality Management Laboratory Assessment and Proficiency Improvement, Assistance in ISO 17025 Accreditation, Training on ISO 17025:2015 Laboratory Management System, Assessment of QAS, Setting up of Laboratories and Application of Statistical Tools and Techniques. <p style="text-align: right;">(email: ncb.cqc@gmail.com)</p>	
Training Services	Short Term Courses on Cement , Concrete & Construction Technology ; Contact & Special Group Training ; Certificate Course in Cement Manufacturing Technology ; Simulator Based Training PG Diploma in Cement Technology (1 year) Certificate Course in Cement Technology through Correspondence (1 year) <p style="text-align: right;">(email: cceb@ncbindia.com)</p>	



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.

National Council for Cement and Building Materials

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

34 Km Stone, Delhi-Mathura Road (NH-2), Ballabgarh-121 004, Haryana, India

Tel: +91-129-2242525, 4192222, 2242051 Fax: +91-129-2245968, 2242100

E-mail: dg@ncbindia.com, nccbm@ncbindia.com

Hyderabad Unit

NCB Bhavan, Old Bombay Road,
Gachibowli

Hyderabad-500 008, (Telangana)

Tel: +91-40-23180400,
23180426

Fax+: 91-40-23000343,
23006739

E-mail: hyd2_ncbhyd@bsnl.in

Ahmedabad Unit

Smeet Bungalows, B/h. Planet
House-2 (PH-2)

Opp. Shukan Shubh-Labh Aptt.,
Off. Judges Bungalows Road
Boadakdev, Ahmedabad-380 054,
(Gujarat)

Tel: +91-79-26855840

Fax+: 91-79-40305841

E-mail: brcncb@rediffmail.com

NCB Bhubaneswar-Project Office

Plot No. 145, Zone-B, Shed No.4
IDCO Central Store

Mancheswar Industrial Estate
Bhubaneswar-751 010, (Odisha)

Tel: +91-9010325172

E-mail: ncbodisha@gmail.com