

Stress on skill development, research and development to reduce \$2.5 trillion global cost of corrosion, at CORCON 2014

"It's time to adopt a zero tolerance approach to corrosion, in the same seriousness we should be attacking cancer or corruption," said Mr Ananth Kumar, Union Minister for Chemicals and Fertilizers, Government of India, speaking at the Special Plenary Session at CORCON-2014 in Mumbai recently. "In fact, I was surprised when I learnt about the enormity and economics of corrosion!" he said.

According to a recent report of the World Corrosion Organization, the annual corrosion cost is approximately \$2.5 trillion or 3 - 4 percent of the global GDP. In India alone, the loss on account of corrosion is estimated at around \$ 67 billion (over Rs 4 lakh crore). "Even if we save 10 percent of that amount we lose because of corrosion, the figure would be enormous."

Mr Ananth Kumar said, "Our Prime Minister has laid great emphasis on 'Make In India' with 'Zero Defect' and 'Zero Effect' on environment. Keeping this in mind, we should work towards manufacturing products, and infrastructure that are corrosion-free."

He said, it is important we should make corrosion planning compulsory in all infrastructure projects and just as we say a product is 'energy efficient,' 'fuel efficient,' we should also be able to say the product is 'corrosion control efficient.'" "Corrosion management will facilitate the manufacturing sector to enhance its competitive edge in the global market. Corrosion control should become an integral part of 'good manufacturing practices."

The need for standardization and set parameters for corrosion control; the need to make corrosion audit a mandatory requirement for industry, and the need for coordination between the operation and maintenance departments towards corrosion mitigation were some of the issues he highlighted. He said, with use of right materials and proper maintenance, for example, a pipeline with three-year longevity, can extend to 15 years. "This is what we need to achieve," he emphasized laying stress on renewed research and development in inventing environmentally sustainable corrosion control techniques.

Mr Ananth Kumar said he was ready for an in-house task force on corrosion control in his ministry. Skill development was another area he emphasized on. "For example, painters

should know why they are doing a particular job. The skilled and semi-skilled labor who are part of this should be aware that what they are doing is part of corrosion control." He also said, the government will be mandating an institution, the CIPET - Central Institute of Plastic Engineering and Technology to be part of this skill development program.

"Yes! We have to work hard towards what our minister has said," noted Dr Samir Degan, Chairman, CORCON 2014, while speaking about the highlights of the event. Dr Degan said this conference was unique and unparalleled in many ways. "In fact, this was the first time that CORCON has been associated with the Ministry of Heavy Industries, Ministry of Chemical and Fertilizers, Federation of Indian Chambers of Commerce and Industry (FICCI), the United States Department of Commercial Services and others in various ways."

Besides plenary talks, key note lectures, invited lectures, there were around 200 contributory oral and poster presentations in 15 technical symposia attended by over 800 delegates from across the globe, noted Dr Samir. "This year too, we had an exclusive student session and besides the technical symposia, eight technical interactive forums were also organized on relevant issues."

Organized by the NACE International Gateway India Section, CORCON 2014, now into its 21st edition, was held at Hotel Grand Hyatt, Mumbai, November 12 - 15, 2014. An exclusive exhibition area featured over 60 participants showcasing their latest products and included FRP (fiber reinforced polymer) and US pavilions.

Earlier, at the inaugural function, Chief Guest Mr Sekhar Basu, Director, Bhabha Atomic Research Centre, Mumbai, said: "With improved corrosion management techniques, it is important that we extend the life of aging assets. For example, the cost to generate one kW of power works out to Rs 5 at a new nuclear energy plant, whereas at old ones like at Tarapur, it works out to only 90 paise per kW. So, the more we extend the life of an asset, the more we save." Dr Basu was also emphatic that corrosion management must start at the design stage. Guest of Honor Mr B. Narayan, Group President, Reliance Industries Ltd, felt that a subject on corrosion must be introduced as basic education in schools.

In addition, as part of the India USA commercial dialogue on corrosion, NIGIS hosted Mr. Arun

Kumar, Assistant Secretary of Commerce, Government of USA and Mrs. Mugdha Sinha, Director, Ministry of Commerce, Government of India, This dialogue focuses on strategies, standards and regulation to enhance cooperation between the two nations to reduce the cost due to corrosion in both economies. Towards this effort, NIGIS along with FICCI will be drafting a white paper in the next 30 days to take the dialogue forward.

The CORCON 2014 Expo had around 65 booths including a USA pavilion with several new participants. Delegates from Australia, China, Denmark, Japan, Switzerland, the United Kingdom, and the United States also attended the conference and expo.

Every year, NACE International Gateway India Section (NIGIS) Corrosion Awareness Awards are presented to honor and respect individuals / institutions for their contribution to corrosion awareness and developments in the field of corrosion science and technology in India.

This year, the awards were as follows: Excellence in Corrosion Science and Technology in Research and Education, Dr R. Vedalakshmi, CSIR – Central Electrochemical Research Institute, Karaikudi; Distinction in Corrosion Science and Technology in Industrial Organization, Dr P. Saravanan, Steel Authority of India Ltd, Ranchi; Distinction in Corrosion Science and Technology in Research and

Education, Mr Sunil Kumar Dayarambhai Kahar, M. S. University of Baroda, Vadodara; the Student Award for PhD Degree to Dr K. Rajesh Kumar, Indian Institute of Technology - Bombay, Mumbai; and Mr Jagadeesh Sure, Indira Gandhi Centre for Atomic Research, Kalpakkam; Student Award for M Tech, Mr Dinesh Bapurao Balgude, Institute of Chemical Technology, Mumbai; Meritorious Contribution in Industrial Organization, Dr Sunil Kumar Chaudhary, Road Construction Dept, Dharbhanga; Meritorious Contribution in Research and Education, Mr Indranil Chatteraj, National Metallurgical Laboratory, Jamshedpur; and Prof S. Rajendran, RVS School of Engineering and Technology, Dindigul; and the Excellent Laboratory Award, CSIR – Structural Engineering Research Centre, Chennai, and Welspun Corp Ltd, Bharuch.

The Lifetime Achievement Award was conferred on Mr S. P. Rao, who served as Chairman and Managing Director of Gail (India) Ltd, the largest gas transmission company in India, for his exemplary efforts in supporting the development of NIGIS and for his vision that has contributed to outstanding growth of the oil and gas industry, including corrosion-control and mitigation technologies in India.

On the last day, 15th November, best technical oral and poster papers, best stalls at the expo were honoured and winners of these awards were :

Technical Sessions	Paper and Author
Cathodic Protection	Electrical Resistivity of Soil for Calculating Resistance of CP Anodes Ramesh Prasad Nagar, AFCONS Corrosion Protection Pvt Ltd, Mumbai
Microbial Corrosion and Inhibitors	Application of Electrochemical Impedance Spectroscopy (EIS) for the Selection of Corrosion Inhibitor Packages for West Kuwait Oil Fields S. Mukadam, Abdulhameed Al-Hashem and M. Dabir, Kuwait Institute for Scientific Research
Corrosion in Petrochemicals, Chemicals & Fertiliser Industries	Failure Analysis of Reactor Recirculation Pump Impellers M Y Joshi and K N Amin, GNFC, Bharuch
Corrosion in Refineries	Damage Mechanisms in Hydroprocessing Units Anil Singh, Pasadena, California, USA & Digvijay Charan, Fluor Daniel India Pvt Limited, Delhi & Cathleen Shargay, Fluor Corporation, USA
Coatings & Linings	Innovative Zinc rich epoxy primers with excellent corrosion and outstanding mechanical properties Santiago Arias Codolar, Pinturas Hempel, Spain
Internal Corrosion of Pipelines	A case study on repair of corrosion defects in bridge attachment river crossing section of in-service petroleum pipeline - challenges and learnings S.D. Pande, Indian Oil Corporation Limited, Panipat and Lalit Kumar Thakur, Indian Oil Corporation Limited, Abu Road

Technical Sessions	Paper and Author
Marine and Offshore Corrosion	Influence of Sea Water on the Mechanical Properties of Glass Fibre Reinforced Polyester Composites Ranjeet S Banthiya, Ajit Bhandakkar , R C Prasad, IIT Bombay, Ashish Jain, IIT (BHU) Varanasi and N. Girish, Indian register of Shipping, Mumbai
Materials and Composites	Long Term Durability of Composite Sleeve Repairs – Historic Literature Vs Real World Removals James Knights, Shawn Laughlin and Andrew Patrick, Clock Spring Company, USA
Power Plants and Utilities	Enhancement of stress corrosion cracking resistance of machined type 304L stainless steel through laser surface treatment Ram Kishor Gupta, P. Ganesh, R. Sundar, R Kaul, K. Ranaganathan, D C Nagpure, K S Bindra, S. M. Oak and L M Kukreja, RRCAT, Indore & B Sunil Kumar & Vivekanand Kain, BARC, Mumbai
Corrosion in RCC	Installation of Cathodic Protection System for Concrete Seawater Structure Rod Callon, Corrosion & Technical Services, Bahrain
Student Symposium	Optimization of Process Parameters for Preparation of Linseed Oil Based Microcapsules for Self Healing Coatings Karan Thanawala, IITB-Monash Research Academy, Mumbai, A S Khanna, IIT Bombay and R K Singh Raman, Monash University, Australia
Structural Integrity and Reliability Assessment	Steam Reformer Tube Life: A Case Study Utilising Advanced Inspection Techniques and Remaining Life Calculations for Bharat Petroleum Corporation Limited (BPCL) Barry R Fisher, Quest Integrity Group, LLC, England and Mahesh S., Bharat Petroleum Corporation Limited, Kerala
Corrosion in Defence Equipment and Facilities	Development of Intumescent fire retardant coating for wooden and metallic structure of the Naval ships Sushil S Pawar and V R More, Naval Materials Research Laboratory, Thane

The following posters were awarded:

Winner	Corrosion Behaviour of Novel Lean Duplex Stainless Steels S Srikanth and P Saravanan, Steel Authority of India Limited, Ranchi
1 st Runner up	Removal iron from glycol water in LNG industries by effective (birm media + charcoal) filtration Sandip Modi, S B Singh & Sanjay Kumar, Petronet LNG Ltd., Bharuch
2 nd Runner up	Electrophoretic deposition of Yttria stabilized Zirconia for detection of Hydrogen sulphide S. Suresh Kumar, L. Sujatha and B. Venkatachalapathy, Rajalakshmi Engineering College, Chennai & T. Subba Rao, BARCF, Kalpakkam and T.M. Sridhar, University of Madras, Chennai

The following exhibition stalls were adjudged as best in various categories:

12 Sqm – Winner	Tinker & Rasor
12 Sqm – Runner	Jotun India Pvt. Ltd.
9 Sqm – Winner	Metal Samples
9Sqm – Runner	Blastline India Pvt. Ltd.

CORCON-2015 is scheduled to be held in Chennai, dates for which will be announced soon.

Glimpses of CORCON 2014



Chief Guest Sekhar Basu, Director, BARC lighting the lamp to inaugurate the conference



Honourable Union Minister for Chemicals and Fertilizers, Shri Ananth Kumar, speaking at the Special Plenary Session



Tushar Jhaveri, Past President, NACE International addressing the delegates during his inaugural address



NIGIS hosted a meeting between Secretary of Commerce, Govt. of USA and Director, Ministry of Commerce, Govt. of India.



Dignitaries in the Dias releasing the CORCON 2014 Technical Proceeding



Delegates during the inauguration session

Glimpses of CORCON 2014



R P Nagar addressing the delegates during Corrosion Awareness Award



Harvey P Hack, President, NACE International delivering Keynote talk



NACE President Harvey P Hack (right) presents the Lifetime Achievement Award for 2014 to S P Rao on behalf of NIGIS



Panel Members during Technical Interactive Forum: Pipeline Integrity and Management



CORCON 2014 Exhibition Area



Certificates for best paper awards being presented by Dr. Samir Degan during valedictory function