

# RANDIP KUMAR DAS

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## Education

- Ph. D. 1998,** Mechanical Engineering, Indian Institute of Technology, Kharagpur.  
**Dissertation Title:** Experimental and Theoretical Studies of Ion-Exchanged X-Zeolite Catalysts for SI Engine Emission Control.
- M. Tech. 1993,** Mechanical Engineering, Indian Institute of Technology, Kharagpur.  
**Specialization:** Thermal Engineering  
**Thesis Title :** Study on the Performance and Emission Characteristics of a SI Engine with CNG As Fuel.
- B. E. 1991,** Mechanical Engineering, Regional Engineering College, Durgapur, India.

## Experience

- 1/2003 – present:** Assistant Professor (Mechanical), Department of Mechanical Engg. and Mining Machinery Engg., Indian School of Mines University, Dhanbad – 826 004, India.
- 4/2000 – 12/2002:** Lecturer (Mechanical), Department of Mechanical Engg. and Mining Machinery Engg., Indian School of Mines University, Dhanbad – 826 004, India.
- 12/98 – 4/2000:** Assistant Professor, Department of Mechanical Engineering, Birla Institute of Technology, Mesra, Ranchi - 825 215, India.
- 11/97 – 11/98:** Assistant manager, R & D Centre, Mahindra & Mahindra Ltd., Automotive Sector, Nashik, India. Engaged in testing of engines performance and emission characteristics and achieving the emission certificates.
- 11/94 – 8/95:** Graduate Engineer Trainee (GET) in Indian Oil Corporation Limited (Pipelines), VCPPL Project, 21B Shiv Marg, Bani Park, Jaipur, India.

## Patents

Title: A process for preparing ammonium salt coated Cu-X zeolites  
No.: 199958

## Awards

- College prize for the highest marks in Project-Work
- The Corps of Electrical and Mechanical Engineers Prize for 1994-95 awarded by the Institution of Engineers (India).

## **Courses Taught**

- Internal Combustion Engines,
- Automobile Engineering,
- Thermodynamics,
- Fluid Mechanics
- Thermal Engineering,
- Heat and Mass Transfer,
- Refrigeration & Air-Conditioning,
- Pollution Formation and Control,
- Engineering Drawing,
- Engineering Mechanics, etc.

## **Theses Supervised**

- 2 M. Tech. Theses on 2-Dimensional and 3-Dimensional Mathematical Modelling for Prediction of Performance of A Catalytic Converter
- About 20 B. Tech. Theses are on the following topics
  - Thermodynamic simulation of fuel-air Otto and Diesel cycles
  - Development of a mathematical model to predict SI and CI engine performance
  - Computer-aided analysis of a Rankine cycles
  - Pollution formation in SI and CI Engines.
  - Potentiality studies of adsorption refrigeration systems
  - Combustion analysis in closed cavities

## **Projects completed**

One MODROB project on Modernisation of Internal Combustion Engines Laboratory, funded by MHRD, Govt. India, Project value - Rs 20 lakh.

## **Seminar Organised**

- NSE – 99: National Seminar on Energy Technologies for Sustainable Developments, Dec. 17-18, 1999, Birla Institute of Technology, Mesra, Ranchi –835 215.
- NSME – 2001: National Seminar on Maintenance Engineering – The Recent Trends, Jan.31 – Feb. 2001, Indian School of Mines, Dhanbad – 826 004.
- COMOAT – 06: National Seminar on Condition Monitoring – Overview and Advanced Technique, 15-16 Sept., 2006, ISM, Dhanbad.

## **Academic Activities**

- Attended a short course on ‘Combined Cycle Power Plants’ organised by I. I. T., Kharagpur and Technical University of Nova Scotia, Canada, January 4-5, 1994, Calcutta, India.
- Participated in the course ‘Advances in Optimal Design of Mechanical Systems’ B. M. Birla Science Centre, Hyderabad, 22-26 March, 1999,
- Attended a short course entitled “Experimental Methods in Thermal Sciences” held at I.I.T., Kanpur, 2-7 August, 1999.
- Attended a short course on “Present Trends and Future Prospects of Non-Conventional Energy – Problems and Challenges” held at BIT, Mesra, Ranchi, 9-21 June, 2003.
- Attended a workshop on “Alternative Refrigerants and cycles” held at Department of Mechanical Engineering, I.I.T., Kharagpur., January 28-30, 2004

## Membership

- Member of The Institution of Engineers (India), Membership No.: M137167/8
- Life member of The Indian Society for Technical Education, Membership No.: LM 48706.

## Publications:

### Journal Publications:

R. K. Das and B. B. Ghosh, Comparative Studies of Gasoline and Compressed Natural Gas as Fuel for Spark Ignition Engines, *IE(I) Journal--MC*, Vol.75, November, 1994, pp. 93-98.

R. K. Das and B. B. Ghosh, Some Studies on the Use of CNG in Research and Commercial Diesel Engines, *IE(I) Journal--MC*, Vol. 76, May 1995, pp. 16-23.

R. K. Das, *et al.*, Development and Performance Studies of Ion-Exchanged X-Zeolites as Catalysts for SI Engine Emission Control, SAE Paper No. 971652.

R. K. Das, *et al.*, NO<sub>x</sub> Reduction in SI Engine Exhaust Using Selective Catalytic Reduction Technique, Catalysts: Emission Control and Lean NO<sub>x</sub> technologies (SP-1353), SAE Paper No. 980935.

R. K. Das and S. Bhattacharyya, 'Catalytic Control of Automotive NO<sub>x</sub>: A Review', *International Journal of Energy Research*, vol. 23, 1999, pp. 351-369.

R. K. Das and S. Bhattacharyya, 'Theoretical and Experimental Analysis of Iron-Exchanged X-Zeolite Catalyst for SI Engine Emission Control', *Experimental Thermal and Fluid Science*, vol. 19, No. 4, 1999, pp. 214-222.

R. K. Das and S. Bhattacharyya, 'Emission Control Through Cu-Exchanged X-Zeolite Catalysts: Experimental Studies and Theoretical Modeling', *ASME Journal of Engg. For Gas Turbines and Power*, vol. 122, no. 1, 2000, pp. 106-111.

R. K. Das and S. Bhattacharyya, 'Catalytic Reduction of NO<sub>x</sub> in Gasoline Engine Exhaust Over Copper- and Nickel-Exchanged X-Zeolite Catalysts', *Energy Conversion and Management*, vol. 42, no. 15-17, 2001, pp. 2019-2027.

### Conference Publications:

R. K. Das, *et al.*, Present Status of Three-Way Catalytic Reduction of Automotive Pollutants, Proc. of Ninth Indian Engineering Congress, Calcutta, December 14-20, 1994, paper no. 36/2.3.2 pp. 367-381.

R. K. Das, *et al.*, Catalytic Control of SI Engine Emissions over Ion-Exchanged X-Zeolites, ASME-ASIA '97, Singapore, Sept., 1997, ASME Tech. Paper N97-AA-77.

R. K. Das and S. Bhattacharyya, 'Catalytic reduction of NO<sub>x</sub> in gasoline engine exhaust over copper- and nickel-exchanged X-zeolite catalysts', 2nd Int. Symposium on Advanced Energy Conversion Systems and Related Technologies (RAN98), Japan, December, 1998, pp. 104-105.

R. K. Das and B. B. Ghosh, Catalytic Reduction of S. I. Engine Emissions Using Ion-Exchanged X-Zeolites, SAE 990015, SIAT '99, pp. 201-206.

R. K. Das, *et al.*, ECE R83 Chassis Dynamometer Transient Test Emission Predictions from ECE R49 Steady State Emission Test Results, SAE 990032, SIAT '99, pp. 339-350.

R. K. Das, *et al.*, 'Mathematical Modelling of a Packed-Bed Catalytic Converter Used for SI Engine Emission Control', Proc. of XVI National Conf. on I. C. Engines & Comb., Jan. 20-22, 2000, Calcutta, pp. 363-370.

R. K. Das, "Some Experiences on Non-Noble Transition Metal Exchanged X-Zeolite Catalysts for SI Engine Emission Control", Proc. of XVI National Convention of Mechanical Engineers, Sept. 29-30, 2000, at Univ. of Roorkee, Roorkee.

R. K. Das, Improvement of Gasoline Engine Performance and Exhaust Characteristics by Fuel Injection Systems, Proc. of National Seminar on Maintenance Engineering – The Recent Trends, 31 Jan. – 1 Feb., 2001, held at Indian School of Mines, Dhanbad.

R. K. Das, *et al.*, 'Mathematical Modelling of a Packed-Bed Catalytic Converter', ISME-2003, XIII National Conf. of Indian Society of Mech. Engrs., Paper No.: TH-034, Dec. 30-31, 2003, IIT, Roorkee.

R. K. Das, The On-Board Diagnostic (OBD-II) System for Inspection and Maintenance of Automotive Catalytic Converters; National Seminar on Condition Monitoring – Overview and Advanced Technique (COMOAT – 06); 15-16 Sept., 2006, ISM, Dhanbad.

R. K. Das: Mathematical Modeling to Optimize Crude Oil Distillation Units for Energy Recovery and Reduction in CO<sub>2</sub> Emissions, International Conf. on "Present Status and Future Trends in petroleum Industry" Dec. 6 – 8, 2007, held at ISMU, Dhanbad.

R. K. Das & Nitesh Goyal: Numerical Study of Effect of Turbulence on Heat Transfer Through Closed Cavities, 34<sup>th</sup> National conference on "Fluid Mechanics and Fluid Power" Dec. 10 – 12, 2007, held at BIT, Mesra, Ranchi.

R. K. Das & Satish Reddy: Development of A Continuous Solid Adsorption Refrigeration and Heating Hybrid System Driven by Solar Energy, National Conf. "New and Renewable Energy – Prospects and Challenges" Dec. 17 – 18, 2007, held at BIT, Mesra, Ranchi.