

DEBABRATA SINGH

Principal Scientist

Department of Pipeline Transport Systems & Societal Technology

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Date of Birth: 05-09-1981



Research Interest:

- ✓ Pipeline Transport Systems.
- ✓ Drinking water purification systems.
- ✓ Entrained flow gasification system.
- ✓ Appropriate/Rural Technologies.

Research Experience:

- ✓ Principal Scientist, September 2015 – Continuing
Department of Pipeline Transport Systems & Societal Technology, CSIR- Institute of Minerals and Materials Technology, Bhubaneswar.
- ✓ Senior Scientist, September 2015 – September 2020
Design & Project Engineering Department, CSIR- Institute of Minerals and Materials Technology, Bhubaneswar.
- ✓ Scientist, September 2010 – September 2015
Design & Project Engineering Department, CSIR- Institute of Minerals and Materials Technology, Bhubaneswar.
- ✓ Jr. Scientist/Scientist-B, September 2007 - September 2010
Design & Rural Technology Department, CSIR- Institute of Minerals and Materials Technology, Bhubaneswar.

Education:

- ✓ B.Tech. Mechanical Engg. from CET, Bhubaneswar.
- ✓ M.Tech. Thermal Engg. from NIT, Rourkela.
- ✓ Advance course on “Materials & Heat Balance in Metallurgical processes” from IIT-Kanpur.
- ✓ PhD Continuing.

Completed Projects:

- ✓ Implementation of TERAFIL water filtration systems in Iron Contaminated areas of Jharkhand & Odisha and optimization of TERAFIL raw materials & its process for Eastern region of India. (2024)
- ✓ Ash Rheology test for HCSD system design of 1X660 MW Panki Thermal Power Station. (2024)
- ✓ Feasibility study on combustion of Petcoke-coal fuel mix in a Fluidized bed reactor (FBR) and reduction of emission through appropriate dosages of chemical reagents during combustion. (2023)
- ✓ Continuous extraction of magnetite reduced from low-grade iron ores in the Fluidized Bed Reactors for higher productivity. (2023)

- ✓ Development of house hold defluoridation unit for safe drinking water in fluoride endemic regions, Phase-I: Studies on functionality of Metal oxyhydroxides Biopolymer Composite (MBC) beads with real life fluoride containing ground water. (2022)
- ✓ Water Quality Assessment and Supply, Installation & Training/Demonstration of Terafil Water filter in the state of Chhattisgarh. (2021)
- ✓ Design & Development of a Vertical Slurry Transport System for Lifting of Minerals/Ores in Heterogeneous Regime. (2020)
- ✓ Design, Development, Testing & Supply of 100 LPD capacity Terafil water filter to Kerala Rural Water Supply and Sanitation Agency (KRWSA), Kerala. (2019)
- ✓ “Combustion studies & Evaluation of Pollution Load on Petroleum Coke and coal samples with Lime dosages for M/s HINDALCO Industries Ltd., Sambalpur, Odisha” funded by M/s HINDALCO Industries Ltd., Sambalpur, Odisha. (2017)
- ✓ “Development of an Entrained flow Gasification System using non-coking coal (F-Grade) blended with Dolochar for thermal applications” funded by MoS, Govt. of India & NMDC Ltd., Hyderabad. (2016)
- ✓ “Fabrication and Installation of 3 Hybrid dryer & 4 Mobile dryer at different PESA (Panchayats - Extension to Scheduled Areas) States on trial run basis” funded by TRIFED, Ministry of Tribal Affairs, New Delhi. (2017)
- ✓ Rheology testing of fly ash samples for designing of HCSD system for M/s Mecgale Pneumatics Pvt. Ltd.
- ✓ “Modeling & Optimization of High Concentration Iron Ore fines/ concentrate slurry Pipelines for Indian Iron Ore Processing Industries” funded by MoS, Govt. of India & NMDC Ltd., Hyderabad. (2018)
- ✓ “Investigation on the Pipe Flow Characteristics of Manganese Nodule slurry for vertically upward Transport” funded by National Institute of Ocean Technology (NIOT), Ministry of Earth Sciences, Chennai. (2016)
- ✓ “Development & installation of FRP based 1000 LPD capacity community size Terafil water purification system at Chinndwara district, M.P.” funded by CSIR-AMPRI, Bhopal. (2017)
- ✓ CSIR-800: “Dissemination of Terafil water treatment system and improved cook-stove in the tribal district of Odisha.” funded by CSIR, New Delhi.
- ✓ “Training, Demonstration and supply of rural technologies in the district of Balangir” funded by District Planning & Monitoring Unit, Balangir, Govt. of Odisha. (2014)

Ongoing Projects:

- ✓ Studies on feasibility of coal-water slurry preparation, transportation & dewatering of pulverized coal.
- ✓ “Design and development of a pilot scale paste thickener for eco-friendly tailings disposal in Indian iron and steel industry.”
- ✓ Farm based S&T Interventions for Socio-economic Development in the aspirational district of Nabarangpur.
- ✓ A detailed investigation of the erosion and corrosion wear in the presence of chemical/bio-additives to forecast the life-cycle of the industrial pipeline.

Publications:

- ✓ *Singh, D., Pothal, J. K. and Senapati, P.K., (2019), Studies on Gasification of High Ash Indian Coal-Dolochar Fuel Mix In A Cyclone Type Entrained Flow Gasification System, in Proceedings of “International Conference on Artificial Intelligence in Manufacturing & Renewable Energy (ICAIMRE-2019)” organised by Gandhi Institute for Education & Technology, Bhubaneswar during 25-26 October 2019, Bhubaneswar.
- ✓ *Singh, D., Barik, R., Pothal, J. K. and Senapati, P.K., (2017), Development of an Entrained Flow Biomass Gasifier (30 KWe) for Thermal Applications using Powdery Biomass, in Proceedings of “Advances in Development and Utilization of Renewable Energy Resources (ADURER)-2017”, at Bhubaneswar during 16– 18, February 2017.
- ✓ Senapati, P.K., *Singh, D. (2017), Utilization of Industrial Wastes through Thermal Gasification Route - A Case Study to Extract Heat Energy from Dolochar for Conservation of Coal, in Proceedings of “National Symposium on Energy Conservation & Renewable Energy Application in Industries & Transportation (ECREAT-2018) organized by NRDF & TATA Steel Ltd. at Bhubaneswar during 26 – 27 October 2017.
- ✓ Senapati, P.K., *Singh, D. and Korado, B. (2014). Some cold model studies on design and development aspects of a cyclone type entrained flow gasification system using blended low grade coal with dolochar wastes. In “International Journal of Engineering & Technical Research” (IJETR).Vol-2, Issue-11,pp 240-247.
- ✓ *Singh, D., Korado, B. and Senapati, P.K. (2014). Feasibility of Non-Coking coal & Dolochar mixture as a fuel source for entrained flow gasification system. In: proc. of. All India Seminar on “Recent Advances in Thermal Engineering (RATE-2014) organized by Institution of Engineers at on 11th January 2014. pp 78-83.
- ✓ *Singh, D. and Senapati, P.K. (2014). Study on effective utilization of powdery biomass as feedstock for entrained flow gasification system. In: proc. of. National Workshop on “Technologies for Sustainable Rural Development-Having Potential of Socio-Economic Upliftment (TSRD-2014)” jointly organized by CSIR-AMPRI, Bhopal & MPCST, Bhopal during 4-5 July 2014 at Bhopal. pp 284-292.
- ✓ Singh, D.,* Mallick, J., Khuntia, S., and Barik, R. (2009). “Biogas Generation from Leafy biomass & vegetable wastes by Application of Ultrasound”. In: proc. of 1st International Conference on the Developments in Renewable Energy Technology (ICDRET) during 14-17 December 2009, Dhaka, Bangladesh.
- ✓ Singh, D., *Khuntia, S. and Barik, R. (2008). “Development of Energy Efficient devices for Conservation of Bio-mass and Up-gradation of Environment in Domestic Sector”. In: proc. of. Renewable Energy and Environment for Sustainable Development at International Conference - Renewable Energy Asia-2008. IIT-Delhi. pp 913-920.

Patent /other IPs:

Metal oxide hydroxides biopolymer composite beads for fluoride removal from groundwater and a process for the preparation thereof. Dr. M. Sujana, R. Sathish,, Ms. P. Behera, Dr. R. Boopathy, D. Singh, A. Sahoo, B. Das, Prof. S. Basu. Appl. No. 202111037374 dated 17-Aug-2021.

Technology Transfer: 34 Nos