ANIL DUBEY, Scientist-D
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AREAS OF INTEREST: Hydraulic Transportation & Pneumatic Conveying of minerals, ores and industrial wastes, Design and development of material handling equipment.

EXPERIENCE:

1. SCIENTIST, CSIR-IMMT, 20th Jan 2021- 20th Jan 2025
2. SENIOR SCIENTIST, CSIR-IMMT, 21st Jan 2025 - Till Date

EDUCATIONAL QUALIFICATION:

M.Tech, Machine Design, VSSUT Burla, Odisha

B.Tech, Mechanical Engineering, BPUT, Rourkela, Odisha

ONGOING PROJECTS:

Sl. No	Title of the Project	Participating Agencies	Role
1.	Hydraulic transportation of raw material/ tailings for the critical minerals through horizontal slurry pipeline.	CSIR, New Delhi	Co-Principal Investigator
2.	Study of the conveying characteristics and behavior of iron ore in pneumatic conveying system.	NMDC Ltd., Hyderabad	Co-Principal Investigator

PROJECTS COMPLETED:

Sl. No	Title of the Project	Participating Agencies	Role
1.	Studies on dense phase pneumatic conveying of bulk solids.	CSIR-IMMT, Bhubaneswar	Principal Investigator
2.	Studies on feasibility of coal-water slurry preparation, transportation & dewatering of pulverized coal.	CSIR, New Delhi	Co-Principal Investigator
3.	Ash rheology studies of Lara Super Thermal Power Project (2×800 MW) for HCSD system design.	BHEL, Bangalore	Co-Principal Investigator
4.	Ash rheology test for HCSD system design of 1 × 660 MW Panki thermal power station.	BHEL, Bangalore	Co-Principal Investigator
5.	Rheological investigation of Ash dyke Fly ash samples for pipeline transportation at BALCO, Korba, Chhattisgarh state.	BALCO, Korba, Chhattisgarh	Investigator
6.	Rheological testing of Fly ash samples for pipelines transportation at Reliance Power project, Singrauli, M.P.	Sasan Power Ltd. (Reliance Power), Singrauli, MP	Investigator
7.	An investigation on the failure analysis of the coal ash slurry pipeline	Macawber Beekay Pvt Ltd., Noida.	Investigator

8.	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	Ministry of Jal Shakti	Investigator
9.	Design and development of a pilot scale paste thickener for eco-friendly tailings disposal in Indian iron and steel industry.	CSIR, New Delhi	Investigator
10.	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.	SERB, New Delhi	Investigator
11.	Studies on influencing parameters of erosion wear in slurry pipeline.	CSIR-IMMT, Bhubaneswar	Investigator

PUBLICATIONS (SCI Journals):

1. Prasad, V., **Anil Dubey**, "Role of critical parameters on the rheology and pipeline transportation of concentrated non-Newtonian iron ore slurry" Journal of Hydrology and Hydromechanics (March 2026) DOI: https://doi.org/10.2478/johh-2026-0001

2. Senapati, P.K, J.K Pothal, **Anil Dubey**, R. Barik, S. Basu. "Analysis of pressure drop and hold-up during vertical transport of limestone slurry in lean phase and heterogeneous regime" The Journal of the Southern African Institute of Mining and Metallurgy (March 2025) DOI: https://doi.org/10.17159/2411-9717/1777/2025

3. **Dubey, Anil**, V. Prasad, P. K. Senapati, R. Barik and J.K. Pothal. "Scale-up prediction of the head loss of a high concentration, non-Newtonian particulate slurry." Particulate Science and Technology (May 2024) DOI:10.1080/02726351.2024.2352710.

4. **Dubey, Anil**, C. R. Nayak, D. K. Nayak, and P. R. Dash. "Stability of a Tapered, Pretwisted, and Rotating Sandwich Beam under Temperature Gradient." Journal of Aerospace Engineering 33, no. 5 (September 2020) DOI: https://doi.org/10.1061/(asce)as.1943-5525.0001178.

5. Nayak, D. K., **Anil Dubey**, C. R. Nayak, and P. R. Dash. "Stability Analysis of an Exponentially Tapered, Pre-Twisted Asymmetric Sandwich Beam on a Variable Pasternak Foundation with Viscoelastic Supports under Temperature Gradient." Journal of the Brazilian Society of Mechanical Sciences and Engineering 42, no. 3 (February 17, 2020). DOI: https://doi.org/10.1007/s40430-020-2210-0.

CONFERENCES:

1. Prasad, Vighnesh, **Anil Dubey**, Rashmiranjan Barik, Debabrata Singh, and Jayanta Kumar Pothal, "Effect of particle concentration and size distribution on the rheology and pipeline transportation of iron ore slurries", IIChE-CHEMCON 2024, NIT Jalandhar, Punjab, December 2024.

2. Senapati, Sambit, Vighnesh Prasad, **Anil Dubey**, and Alangar Sathyabhama. "Discrepancy in Predicted Head Loss of Non-Newtonian Aqueous Suspension of Fly Ash with Two Different Yield Stress Values Obtained from Rheological Data." Fluid Mechanics and Fluid Power, Volume 6, 2024, 445–57. https://doi.org/10.1007/978-981-99-5755-2_43.

3. Prasad, Vighnesh, **Anil Dubey**, and Snehasis Behera. “International Conference on Emerging Trends in Engineering and Technology .” In Hydraulic Conveying through the Slurry Pipeline: Environment-Friendly Safe Disposal of Indian Coal Fly Ash, 113–17. CRC Press
4. Prasad, Vighnesh, Pradipta Kumar Senapati, **Anil Dubey**, Jayanta Kumar Pothal, Rashmiranjan Barik, “Influence of rheological characteristics on the hydraulic conveying of red mud slurries” Indian Chemical Engineering Congress & 74th Annual Session of Indian Institute of Chemical Engineers (CHEMCON 2021), CSIR – IMMT Bhubaneswar (Odisha), SWM 444, pp. 155-156, December 2021.

ACHIEVEMENTS:

1. Successfully upgraded and commissioned pneumatic conveying pilot plant with 55 m long, 2-inch NB MS pneumatic conveying line, 7 bar-250 CFM capacity screw air compressor. My responsibility was to upgrade the plant with instrumentation for automatic Data Logging. The instruments included a Thermal Mass Flow meter, a PT100 temperature sensor, 09 Flush Diaphragm type pressure transducers, 12 Digital Indicators for monitoring system operating parameters and a 24-channel data logger. A 40 m long purging line of ¾ inch NB, 500 CFM refrigerant air dryer and 500 CFM Pulse Jet Mechanism type bag filter were also installed under my supervision.

2. Involved in the design, fabrication and installation of a 50 kg/hr Pilot Scale Paste Thickener.

SKILLS:

1. **CAD:**
   Fusion 360 (Design, Drawing and Animation)
   CATIA V5 (Part Design)
2. **Machine Learning** using Python and Matlab.
3. **Numerical Computation** using Matlab and Octave.
4. **Rheological investigation** of mineral suspensions- Flow Rate Curve (Shear Stress vs Shear Rate using Cup and Bob geometry), Measurement of Yield Stress using Stress Growth method and using Vane Geometry.

TRAININGS:

1. Matlab for mechanical engineers (Skill-Lync Certificate UID- efd5pokjx2wlmtbh).
2. Python for mechanical engineers (Skill-Lync Certificate UID- hzermvju3o7x2tcw).
3. Numerical methods for engineers
   (Coursera- coursera.org/verify/MY4UHGQM7ZA4).
4. Introduction to Machine Learning
   (Coursera- coursera.org/verify/WZZTA9U9M3N2).
5. Machine Learning Fundamentals in depth
   (Skill-Lync Certificate UID- MWn5LjQgP914qOfy).