Sanjay Dangi, Mechanical Engineer
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Education

M.S, Mechanical Engineering (GPA: 3.91/4) **(2023 – 2025)**
Northern Illinois University

B.E, Mechanical Engineering (74/100)
Tribhuvan University, Pulchowk Campus, Nepal **(2014 – 2018)**

Technical Skills

CAD/CAM: SolidWorks, Fusion360, AutoCAD, CNC Coding, GD&T
FEA: ANSYS, COMSOL, SolidWorks Simulation, MATLAB
Manufacturing: 3D Printing, Lathe, Welding, Milling, Basic PLC, SCADA, Arduino, PIV Laser

Projects

M.S. Thesis, PIV Characterization of a Large-Scale EHD Vortex Confinement Flow in Electrostatic Precipitator for Particle Agglomeration
B.E. Thesis, Design and Fabrication of Manually Operated Engine-powered Rice Reaper Machine Using SolidWorks and ANSYS as Design Tools with Various Machining Processes

Professional Experiences

Research Assistant: Northern Illinois University (2023 – Present)

- 3D CAD design of efficient air-cleaner Electrostatic Precipitator (ESP) using vortex confinement analysis
- Fabricated lab-scale ESP setup and applied high voltage (-25 to -40 kV)
- Performed PIV-based vortex analysis using SigmaX and MATLAB

Mechanical Engineer / Plant In-Charge
Khilung Kalika Biogas Power Plant, Nepal (2019 – 2022)

- Maintained anaerobic digesters and decantation unit
- Programmed and maintained PLC (ABB) and SCADA systems
- Supervised chemical scrubbing for biogas purification
- Operated 1 MW bio-gas and 700 kW diesel generators
- Managed fertilizer production and factory maintenance
- Led technical team and coordinated labor operations
- Collaborated with local government agencies to distribute bio-fertilizer, leading to a marked increase in product demand and production

Wastewater Treatment: Installation and Operation (2020 – 2022)

- Led installation/testing of a wastewater treatment plant with Bikon Water Treatment Pvt. Ltd.
- Conducted chemical treatment and lab analysis of effluent quality

Science and Technology Project Instructor
Rockford Environmental Science Academy (RESA) (2024 – 2025)

- Taught fundamentals of 3D printing and Tinkercad design
- Delivered hands-on CAD workshops and guided model creation
- Organized design challenges and tutorials to enhance student creativity

Internship Experiences

TOYOTA, Kathmandu, Nepal (Sept 2017 – Dec 2017)

- Performed general IC engine servicing and maintenance
- Diagnosed faults in EV batteries
- Learned the basics of LEAN manufacturing concepts

Chaudhary Groups, Kathmandu, Nepal (Jan 2018 – Apr 2018)

- Re-designed production plant layout for improved efficiency
- Maintained noodle, cheeseball production lines, boilers, and diesel generators

Podium Presentations

Dangi et al., (2018). *Design and Fabrication of Engine Powered Manually Operated Rice Reaper.* RECAST, Tribhuvan University (TU)

Dangi et al., (2024). *PIV Characterization of a Large-Scale EHD Vortex Confinement Flow in Wire-to-Plate Electrostatic Precipitator for Particle Agglomeration.* The American Association for Aerosol Research (AAAR)