Services for Energy Efficiency and Waste Management: Industrial collaboration of Shiv Nadar University

Assuming the responsibility to support the industry in finding a resolution to their perpetual problems while working to positively impact the Environment, the Department of Chemical Engineering established collaboration with nearby industries, such as Kawatra paper mills, Dadri, Kings international Ltd, Unnao (Leather industry), and nearby restaurants to help them not only find an eco-friendly and sustainable solution to the waste management but to also help convert the waste into energy.

The intellectual capital of the professors of the university helped find a feasible solution to effectively handle the waste of these industries including, paper mill sludge or mixed food waste, and convert the same into energy using thermochemical conversion methods of solid waste that include various types of pyrolysis and gasification process. Moreover, liquid waste such as wastewater was also treated with the biomaterials developed from the solid waste generated from these industries. Different kinds of biomaterials are developed from these wastes that include bio-adsorbents, bio-membranes, and biofilms. Bio-adsorbents are used to treat the wastewater via physi-adsorption and produce clean water and bio-membranes are used from separating the hydrogen from syngas produced from pyrolysis and gasification of solid waste to produce clean fuel. Department of Chemical Engineering has had industrial collaborations with nearby industries such as Kawatra Paper Mills since 2016 in Dadri and Kings International Ltd. (8th Jan, 2022), Unnao (Leather Industry) since 2021.

The department collaborated nationally and internationally on the issue of waste management and alternative use of clean energy relevant to sustainable development goals 7, 12, and 13.

The above-mentioned initiative could help resolve the problem of the industry based on the collaborative research undertaken by the department as part of the international collaboration with Prof. Chris Cheeseman of Civil and Environmental Engineering department at Imperial College of London (8th August 2022); Dr. Mohd. K. AL. Mesfer & Dr. Mohd. Danish, Department of Chemical Engineering, College of Engineering, King Khalid University, Abha, Saudi Arabia; Dr. Harrson S. Santana, Research Associate School of Chemical Engineering, University of Campinas, Brazil and Dr. Kamal Khatri, The LNM Institute of Information Technology, Associate Professor (Mechanical-Mechatronics Engineering) Jaipur, India.