

CHEMICAL ENGINEERING SCIENCES

ACTIVITIES

- Pilot Plant Studies for Mono Nitro Toluenes
- Bench scale studies on Hydrazine Hydrate
- Bench scale studies on continuous process for Sebacic Acid
- Benzaldehyde Pilot plant Studies
- CO₂ Removal from Natural Gas (Joint project with EIL/ONGC)
- Effluent treatment and chemical recovery for Consolidated Fibres and Chemical Limited
- Propane/Propylene Separation
- Continuous alcohol fermentation using yeast crystals
- Advanced Real-Time Process Control Technology for Batch Reactors
- Automation of Chemical Reactors in Pharmaceutical Industries.
- Artificial Intelligence Based Tools for Process Modeling, Optimization and Control
- Intelligent Hybrid Control System for Complex Processes
- Plant Wide Control Design Procedure Based on Nonlinearity and Interaction Measures.

INFRASTRUCTURE

The range of pilot plant equipment facilities cover wide range of unit operations commonly encountered in chemical process industries like distillation, absorption, filtration, evaporation, size reduction, drying, liquid-liquid extraction and solid-liquid extraction of various sizes capacities which are useful in up scaling the chemical processes.

- Software
 - Aspen Plus
 - BJAC
 - METANA
 - DISP
 - CONTOUR
 - PEEPI
 - SAFETI-Micro
 - PSM OFFICE, ver 1.0
 - WHAZAN EFFECTS
- Facilities

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Horton sphere for LPG storage

- Dust Explosion Test Apparatus
- Reaction Calorimeter
- Accelerating Rate Calorimeter
- Bench Top Reactor System
- Bench scale facilities for
 - * Reverse Osmosis
 - * Nano Filtration
 - * Ultra Filtration
 - * Pervaporation
 - * Electro Dialysis

CLIENTS

- Gujarat State Fertilizer Corporation Limited, Baroda
- Mangalore Chemicals & Fertilizers, Mangalore
- Oil and Natural Gas Corporation, Uran
- Hindustan Petroleum Corporation, Visakhapatnam
- Atic Industries, Valsad
- Panyam cement & Mineral Industries Limited, Hyderabad
- Gas Authority of India Ltd.
- Deepak Nitrite Limited, Pune
- Vasant Chemicals Ltd., Hyderabad

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CHEMICAL ENGINEERING SCIENCES

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VISION AND GOAL

The Chemical Engineering Division at IICT has made significant contribution both to basic and applied research. The division, catering to the needs of the chemical process industries, is associated with activities ranging from experimental evaluation of process routes to design & commissioning of commercial plants for organic intermediates and specialty chemicals. All the activities including scale-up studies, design data collection, process design, preparation of engineering documents and interaction with project implementation agencies are undertaken by the division for successful transfer of technologies.

SPECIALIST GROUPS

- Process Engineering and Novel Separations
 - Process Engineering
 - Process Dynamics and Control
 - Properties Evaluation
 - Membrane Separations
- Chemical Plant Design and Modelling
 - Chemical Plant Design and Basic Engineering
 - Process Modelling and Simulation
 - Process Safety and Risk Analysis
 - Biochemical and Environmental Engineering

COMPETENCIES

- Process Engineering and scale up of batch/continuous chemical processes
- Pilot plant design / operation



GAIL's Gas Cracker Pilot Plant

- Chemical Plant Design and Basic Engineering
- Consultancy services for revamp, debottlenecking of commercial plants.
- Techno economic evaluation
- Startup assistance for commercial plants
- Trouble shooting in commercial plants
- Modelling, Simulation and optimization of Chemical / Petro Chemical Plants
- Process Safety and Risk Analysis
- Advanced real time process control strategies for batch reactors
- Intelligent hybrid control systems for complex processes.

S&T SERVICES

- Measurement and prediction of physico chemical and thermodynamic properties
- Industrial wastewater treatment
- Performance evaluation of effluent treatment plants
- Upgradation of effluent treatment plants
- Analytical monitoring of air, water and soil.
- Environmental audit
- Process safety studies



Melt Crystallization Unit



Integrated Pesticide Plant