

COAL & GAS TECHNOLOGY

AREAS OF FUTUREISTIC INTEREST

- Centralized Coal gasifier to fuel Small-scale Industrial Clusters
- Pressure Swing adsorption for Capture & Sequestration of CO₂
- Gas Hydrates for Carbon dioxide Sequestration
- Liquid-fuels from Coal

INFRASTRUCTURE AVAILABLE

- 24 TPD moving Bed Coal gasification Pilot Plant
- 10kW Methanol Reformer with 500W Fuel Cell
- Biomass Feeding system
- Briquette Making Machines
- Autoclave Reactors
- Humidity Control Chamber
- Pressure swing adsorption Unit
- Hot gas Filter Candle Assembly
- Hot Gas Desulphurizer
- Dusty Gas Simulator
- 50kW Methanol Reformer and Fuel Cell system

MAJOR CLIENTS

- Ministry of Coal, New Delhi
- Ministry of Non-conventional Energy Sources, New Delhi
- Ministry of Power, New Delhi
- The Energy & Resources Institute, New Delhi
- Singareni Collieries Co Limited, Hyderabad
- Bharat Heavy Electricals Ltd.(R&D), Hyderabad

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VISION AND GOAL

- Development of Eco-friendly Processes for Commercial Utilization of abundantly available low-grade Indian non-caking Coals
- High Pressure Gasification of low-grade Indian Coals in Dry-bottom Moving Bed Reactors
- Catalytic Reforming of Methanol for Hydrogen generation for Fuel Cells
- Process Development for High/Medium temperature Multi-contaminant Clean up of Coal-derived Fuel Gases
- Direct Sourcing of Value-added Chemicals from Coal
- Analysis of Coals for Resource Quality Assessment

CORE COMPETENCIES

- Carbonization of Coal & Bio-mass materials
- High Pressure Moving bed Gasification of Coal
- Scale-up & Techno-Economic Assessment of Gasification of Coal for IGCC Power Generation
- Economic evaluation of Clean Coal Technological Options by Incremental Costing
- Integrated Gasification Combined Cycle for Power Generation
- Hydrogen generation from Oxy-fuels for Fuel Cell applications
- Bench-scale studies for development of gas clean up technologies
- Alkylation of Phenol/m-Cresol with Methanol
- Coal S&T (analytical) Services

ACTIVITIES

PROJECTS COMPLETED/TECHNOLOGIES AVAILABLE

- Low Temperature Carbonization (LTC)
- Briquetting of Coal-char fines for domestic use
- Atmospheric Fluid bed gasification to produce fuel gas from coal
- Moving bed pressure gasification of low-grade coals
- Coal tar hydrogenation to middle distillates
- Benzene to Cyclohexane
- Shaped industrial fuel
- Formed coke from coke breeze
- Domestic fuel briquettes from coir pith, saw dust etc
- Impregnating Pitch from high temperature Coal tar
- Unsymmetric Di-Methyl Hydrazine (UDMH) for Space Applications
- Pine Char Carbonization for rubber industries
- F-T Synthesis to produce liquid fuels from coals
- Process for carbonization of special plant materials
- Hydro-cracking of tar to paraffins, naphthalenes, etc
- Coal-tar distillation
- Extraction of tar-acids and tar-bases
- Separation of picoline from a mixture of picoline, pyridine and lutidine
- Hot Gas Clean Up for Dust removal & Desulphurization of Coal-derived Fuel Gases

CURRENT RESEARCH AREAS

- Hydrogen production by Catalytic Reforming of Methanol for a 50kW Fuel Cell Stack
- Medium Temperature, Multi-contaminant Clean up of Coal-derived Fuel Gases
- Chemical Characterization of Coal / Coal-derived products
- Direct sourcing of value added chemicals from coal