

COAL CARBONISATION

Coke making had been one of the major pursuits of CFRI since inception. Fundamental research on coal science and the carbonisation process found its applications in the development and transfer of various technologies on HTC coke, formed coke, briquettes, soft coke at different point of time. Keeping in view the gradual depletion of indigenous good quality coking coal resources , R&D initiatives at CFRI provided the scientific basis and scope of utilising different type inferior grade coals as blend components for metallurgical coke making. Application of the knowledgebase backed by validation tests in pilot plants has helped in optimising the blend components for various steel plants utilising both indigenous and imported coals.

Compelling factors like severe environmental regulations on coke making technologies, market competitiveness and demand activated the development of environment friendly improved design for coke making which have already entered the market. CFRI with its built in expertise in the area of carbonisation is in a ready state of preparedness to provide not only specialised services but would remain a key player as a technology provider to the growing coke making industries.



Significant Contribution

- § Assessment of potential for inferior grade coal in coke making
- § Development of process of coking by blending inferior coals.
- § Optimisation of coal blends for steel plants
- § Development of sole heated improved Beehive coke oven (TATA – CFRI type).
- § Development of improved non-recovery type coke oven (Kumbraj).
- § Development of energy efficient environment friendly coke oven battery by dragging /Pushing the product with provision of HR/NR
- § Development of Non-recovery type soft coke oven.
- § Formed coke/ briquetting technology for domestic as well as industrial fuel.
- § Industrial briquetting technology of waste (-6mm) coke breeze.
- § Energy efficient curing chamber for curing briquettes.
- § Pilot stamp charging facility for by-product coke oven.

Major Analytical & Test Facilities Available

Coke/Briquette Making

- § Electrically heated Pilot coke oven.
- § Oil fired By-product coke oven.
- § Non-Recovery type Battery consisting of three Pilot Coke Ovens



- § Pilot Briquetting plant of 1tph capacity
- § Pilot scale coal/lignite devolatiliser
- § Energy Efficient pilot curing chamber
- § Bench scale electrically heated devolatiliser of different capacities
- § Laboratory scale stamping machine
- § Pilot scale stamping machine for both byproduct as well as non recovery type coke oven
- § Electrically heated laboratory furnace for coke making of different capacities

Coal Quality

- § Chemical and physical characteristics of coal - proximate, ultimate, Heat value, HGI, Porosity, ash composition
- § Petrographic analyses - Reflectance, macerals, microlithotypes
- § Coking propensity - CSN, Roga Index, LTGK, HTGK, Dilatometer



Coke Quality

- § Micum & half Micum Test
- § CSR/CRI
- § Shatter Test
- § Reactivity of coke/char
- § Coke texture & morphology
- § Point crushing strength of briquette

CRI – CSR apparatus



Client

- § Steel sector

- § Sponge Iron industries
- § Private entrepreneur
- § Foundries

Specialised Services

Activities	Time Frame	Approximate Cost (Rs.)
Testing of coal blend in electrically heated Pilot coke Oven	One month	1.50 lakh
Blend optimisation studies by petrographic and chemical analyses supported by Pilot coke oven test	Three months	10.0 lakh
Trouble shooting of by product coke oven by Technical audit	One month	5.0 lakh
Trouble shooting/Technical Audit of Non Recovery coke oven	One month	3.0 lakh
Petrographic Analysis of coal	One week/sample	6500.00
CSR & CRI test of coke	-do-	5000.00
Micum test	-do-	3000.00

Deliverables

Activities	Time Frame	Approx. Cost (Rs.)
Detailed Design, Drawing of Non Recovery Coke Oven including Consultancy during Erection & Commissioning	6 months/battery	20.00 lakhs
Detailed Design, Drawing of Industrial Briquetting plant from coke breeze including Consultancy during Erection & Commissioning	6 months/plant of 25tpd	10.00 lakhs
Licensing & detailed drawing for Non Recovery type soft coke plant	One month	1.7 lakh/battery

For further details please contact :

Director
Central Institute Of Mining & Fuel Research,
Barwa Road,
Dhanbad – 826001, Jharkhand
Website: www.cimfr.nic.in