

Product No. 6

Invitation for Expression of Interest (Eoi) for “Design, development, erection, commission & demonstration run of a 100 TPH Dry Coal beneficiation pilot plant based on CSIR-CIMFR developed “Coal Winnowing Technology”

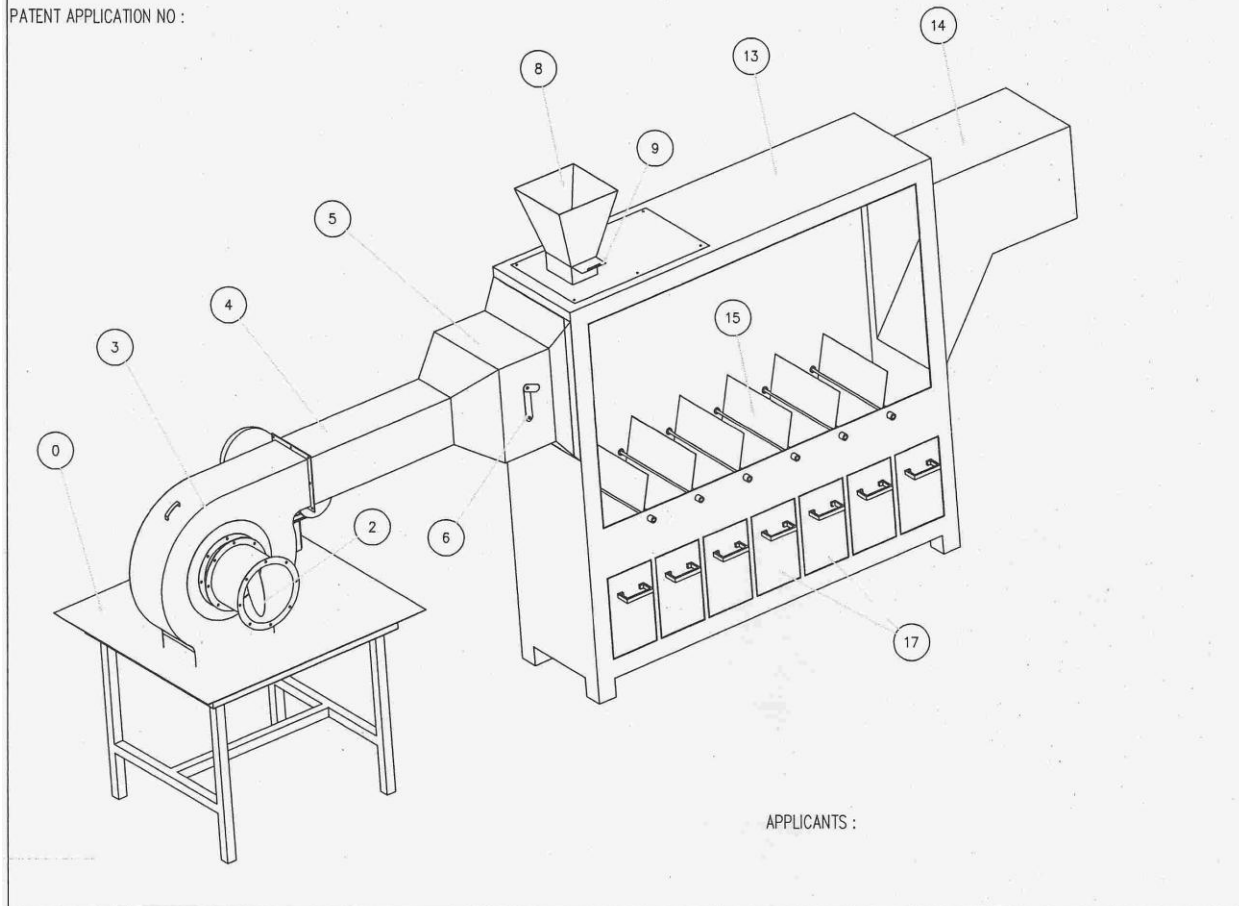
1.0 Background:

CSIR-Central Institute of Mining and Fuel Research (CIMFR) has developed and patented a “COAL WINNOWER SYSTEM” for dry coal beneficiation. This can be effectively utilized for reducing overall ash content of ROM coal to the acceptable ash limit of 34% in Thermal power plants in India.

2.0 Feature of the Developed System

Bench scale experimental unit description :

The bench scale Coal Winnower System of 3.5 TPH capacity is made of MS sheet of 3 mm thickness. High pressure and high velocity air stream generated by a centrifugal air blower (3) which is mounted on metal base (0). Air is sucked by the blower through a suction inlet (1) and inlet air is controlled by a damper (2). Air flow is made stream lined by a rectangular duct (4) then air is expanded in a short rectangular expander (5). In side this rectangular expander air direction controlling damper (6) is there. The high pressure and high velocity air stream is then enters in the winnowing chamber (13) and leaves from the chamber through a rectangular duct (14). The centrifugal air blower is driven by an electric motor (10). Power is transmitted to the air blower via a set of V-belt (12) to the blower pulley (11). Sized coal is fed into the coal winnowing machine through a feed hopper (8). The coal feed rate can be controlled by a movable plate (9). When the experiment is conducted; coal is fed into the coal winnowing machine by the feed hopper (8) which is either in vertical position or in angular position. Air enters into the coal winnowing machine horizontally across the coal feed. Coal particles when enters in the air stream get dispersed in the air stream according to the terminal velocities of each individual particles. During its traverse, their separation is guided by few deflecting plates (15) and then particles are collected in the bottom collection boxes/bins (17).



APPLICANTS :

Drawing of experimental unit

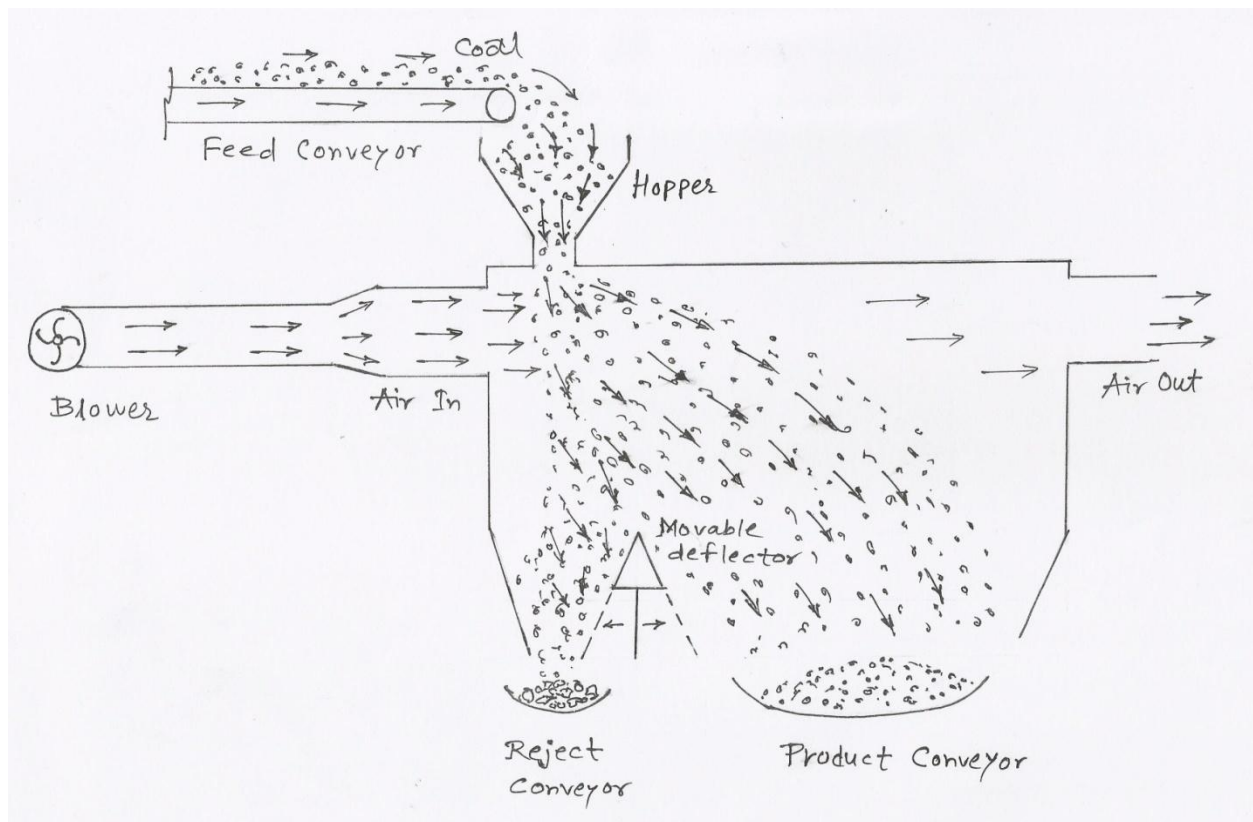
Proposed 100 TPH System descriptions:

In the proposed 100 TPH system there will be a series of 3 - Winnowing chambers to process the Coal/shale/stone of Size fraction 50-25 mm, 25-13 mm and 13-6 mm. -6mm coal/shale/stone fraction will be screened out. Each chamber has individual vibratory coal feeders and high pressure air blower system of about 30 HP, 20 HP, 10 HP capacities each. Air from blowers will enter into the winnowing chambers horizontally and Coal particles will be fed vertically through vibratory feeders. After density separation of coal/shale particles; shale/stone particles will settle in the first bottom chamber and coal particle will settle in the second bottom chamber. Below these chambers belt conveyors of about 80 TPH clean coal conveyor & about 20 TPH capacity reject conveyor will be there to take out clean coal and rejects from bottom of the Coal winnowing system.

A separate Coal handling system will be there to handle 100-150 TPH ROM coals which will comprise of a dump hopper, double roll crushers, conveyors, hoppers, vibratory feeders.

Thereafter, clean coal & rejects handling system. Automatic coal sampling system must be incorporated at ROM coal feed conveyor before crusher, at 3 - size fractions feed conveyors before coal winnowing system, at clean coal conveyor and at reject coal conveyor.

PLC system to control the whole plant. Online ash monitoring system with back signal process control for controlling the coal feed rate from hoppers, air flow rate at entry of winnowing system and control movement of separating plate to get desired yield & ash% of clean coals (ie ash% <34%) and rejects.



Proposed 100 TPH Coal winnowing system (Side view)

Advantages of Coal winnowing system:

- Simple, innovative, low cost system for Dry Coal beneficiation.
- Air is being used as separation medium, which is free & abundant.
- Low processing cost due to absence of water circuit. As per one estimate the washing cost can be reduced to 50% of conventional wet coal washing plants.
- No use of water hence no water pollution.
- Pit head & movable plant may be developed.
- Washed coal can be used in the conventional Thermal power plants & reject coal may be used in the reject based power plants.

Benefit to the Industry & Society:

- Innovative, easy and low cost process and equipment for dry coal beneficiation for direct application to reduce the overall coal ash content of the coal supplied to Thermal power plants. It will improve the efficiency of the power plant and also reduce the cost of generation of electricity.
- The equipment & process will be beneficial to reduce the GHG emission.

3.0 Requirement

CSIR-CIMFR requires an industry partner for **“Design, development, erection, commission & demonstration run of a 100 TPH Dry Coal beneficiation pilot plant based on CSIR-CIMFR developed “Coal Winnowing Technology”**. Therefore, Expression of Interest (EoI) is invited from the firms for fabrication and commercialization of the system.

4.0 Eligibility Criteria

- (i) The firm should have footprint in coal/mining sector.
- (ii) The firm should have experience in the coal handling plant and coal washing equipment manufacturing, erection and commissioning.
- (iii) The firm should have in-house facility and also should have manufacturing facility for supply of equipment from their own shop.
- (iv) Turnover of the company should be minimum of Rs. 100.00 crores during last financial year.

5.0 Terms and Conditions

- (i) The selected firm shall have to sign a licensing agreement which shall be finalized on mutually agreed terms and conditions based on the CSIR guidelines and shall be signed before the commencement of the project.

- (ii) A lump sum licensing fee need to be paid by the selected firm before signing the licensing agreement for commercialization of the system. Minimum lump sum premium shall be Rs. 5.00 lakh.
- (iii) Royalty rate to be paid by the firm based on percentage of selling price (excluding taxes) of the system during commercialization period. It should be minimum of 3%.
- (iv) Fabrication of the system should be completed within 1 (one) year from the date of release of fund to the selected firm.
- (v) Licensing agreement would be valid for 5 years and which may be renewed based on mutual consent.
- (vi) The technically qualified firm offering maximum lump sum premium and royalty will be selected for licensing agreement.

6.0 Expression of Interest

The interested firm should submit their EoI in two bids (Technical and Financial Bids) separately with following information and documents:

- a) The bid prepared by the firm as well as all correspondence and documents relating to the bid exchanged by the technical partner shall be written in English language only. The bidder shall bear all costs of translation, if any, to the English language and all risks of the accuracy of such translation, for documents provided by the technical partner.
- b) The firm shall have to submit the documentary evidences to support the eligibility criteria mentioned from point 4.0 sl. (i) to (iv).
- c) The firm should also furnish the detailed documents of legal name & address, year of registration, PAN/TIN/GST details and financial standing (audited balanced sheet report & Income Tax).
- d) CSIR-CIMFR requires that the firm should observe the highest standard of ethics during execution of such contracts.
- e) The last date & time for receipt of proposal is 31.05.2018 at 5:00 PM (IST).

8.0 Submission of EoI

The interested firms should submit their EoI to:

The Head, BDIL,
CSIR-Central Institute of Mining and Fuel Research,
Barwa Road, Dhanbad – 826015
Jharkhand, India