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भारत सरकार
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भाभा परमाणु अनुसंधान केंद्र
BHABHA ATOMIC RESEARCH CENTRE
नाभिकीय पुनः चक्रण बोर्ड
NUCLEAR RECYCLE BOARD
प्रगत ईंधन संविरचन सुविधा
ADVANCED FUEL FABRICATION FACILITY

Ref. No : BARC(T)/NRB/AFF/ FPQCS /GEN/07/ 2017/ 223

Date: 14 / 12 / 2017

Sub: Designing, Fabrication and Installation of Automatic Pellet Segregation System.

Dear Sir,

Quotations are invited for Enquiry of **Designing, Fabrication and Installation of Automatic Pellet Segregation System**. Your quotation in a sealed envelope should reach the undersigned on or before **10/01/2018 upto 14:00 hrs and the sealed quotation will be opened at 15:00 hrs on 11/01/2018** in the presence of Accounts Officer, GSO, BARC Tarapur. The envelope should be super scribed the subject and reference number of this letter.

Note: Interested suppliers may email following IDs or submit the request letter for any query regarding work order

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Annexure I : Pellet Segregation System

Description:

Advanced Fuel Fabrication Facility is fabricating two type of pellets both having diameter ranging from 5.35 – 5.58mm and having length ranging from 6.5-8.5 mm but one of the type of pellet having concentric through-n-through hole in the center (1.8mm in dia) as shown below.

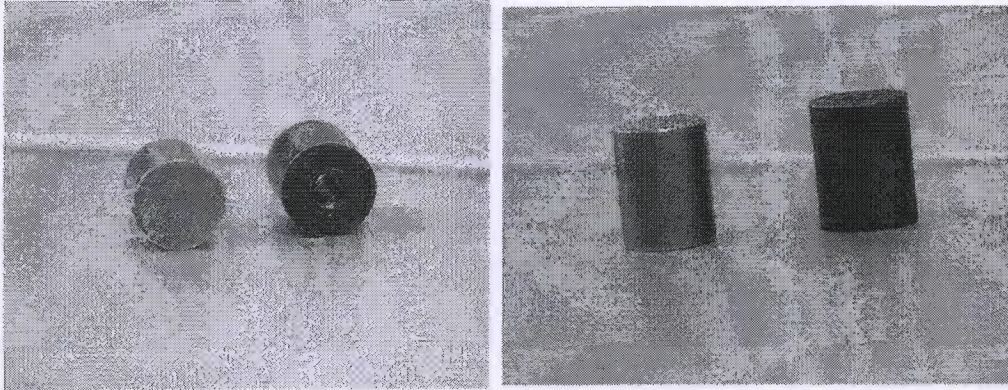


Figure 1: Pellet with and without center hole

These pellets are flat at both the ends and can easily stand on its own.

We require a system which we termed as **Pellet Segregation System** for

1. Separating these two type of pellets. Basis of separation: pellet with hole in one bin and pellet without hole in other.
2. Visual examination of pellets for any chipping on edges or crack in the surface.

System must contain bowl feeder which can hold 2500 pellets (~3 kg) at a time. The pellets should move forward while rotating on its cylindrical axis so that the pellet cylindrical surface (as shown in Figure 2) can be visually examined and pick out, if any, pellets which are having chips or crack on the surface.



Figure 2: Pellet resting on its cylindrical axis.

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All pellets finally must come out of bowl feeder onto the linear feeder while standing on

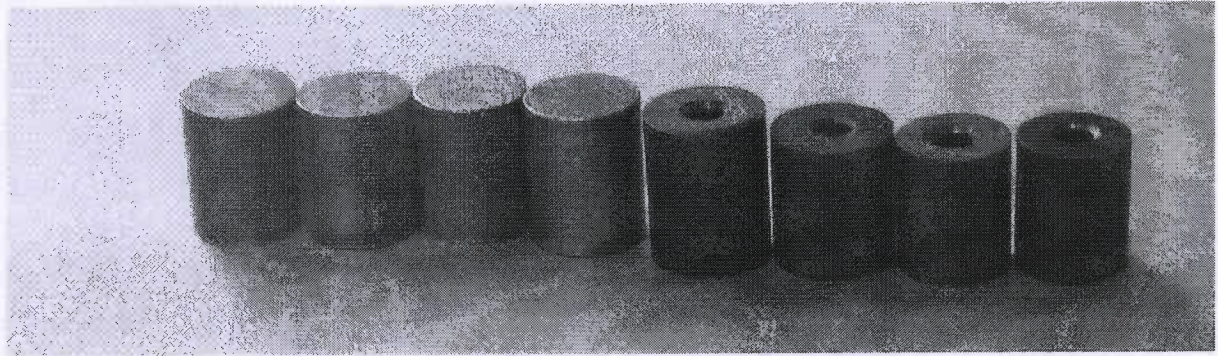


Figure 3: Pellet resting on its end surface with center hole visible from top.

the one if its end so the hole at the end is visible to operator as shown in figure 3. Alternate method or idea can also employed but end result must be to segregate pellet with hole and pellet without hole. The segregation must be automatic with use of camera/ laser/ or any other method to detect hole.

Pellet Segregation System must have

1. A bowl feeder of sufficient size to hold 2500-3000 pellets. (3 kg total in weight). The material of the bowl feeder should be SS 304. The vibration pad for bowl feeder should be such that no observable vibration should be felt on the base. Minimum feeding rate must be 50 to 60 pellets per minute.
2. The system will be installed inside the enclosed chamber called glove box having maximum dimensions of 1m X 1m X 1m. Maximum dimension of bowl feeder or linear feeder or whole system must be such that it can pass through 10" cylindrical port which is 2" in length in assembled or disassembled condition.
3. It should rotate pellet on its cylindrical axis so that all the cylindrical surface is visible to operator
4. It should have at least 300 mm linear guide so that operator can pick the pellet while it is rotating on its cylindrical axis. OR some other kind of arrangement so that operator can drop the pellet having chips on the edges from the feeder into collecting bin.
5. Finally the pellets must be segregated into two categories as pellets with hole and pellets without hole. The segregation must be automated using camera/laser beam/

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- or any other method to detect hole to segregate the pellets. System should also have provision for manual segregation of pellet in addition to automated segregation.
6. The speed of segregation must be at least 40 pellets per min.
 7. Collector bins for collecting pellet with hole and pellet without hole.
 8. Speed controller for bowl feeder & Foot switch for On/off control of bowl feeder.
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Scope of Supply:

1. Bowl Feeder: Diameter less than 200mm and must hold 3kg pellets as mentioned above.
 2. Linear Feeder of minimum 300mm in length and maximum width less than 200mm.
 3. Camera having minimum magnification of 2Mp or Laser having beam width less than 200micron.
 4. Two Collector bins for holding pellets
 5. Foot switch for operating bowl feeder and linear feeder.
6. **Acceptance Criteria: The acceptance of Pellet Segregation System will be subjected to fulfillment of following conditions:**
- a. All the requirements mentioned in the specification from Serial No (1) to (8) must be met.
 - b. Designing of Pellet Segregation System is in scope of the supplier and Mechanical Drawing must be sent for approval before commencing fabrication work.
 - c. Supplier must submit schematic drawing while quoting for this job
 - d. Pre-dispatch inspection of the polishing machine will be done at supplier end by performing segregation of dummy pellets brought by us.
 - e. Final Inspection of the machine will be done after installing machine inside the glove box at out end. It is reiterated that machine dimension must be such that it can pass through 10inch circular port in assembled or dissembled condition.

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