

PULVERIZERS



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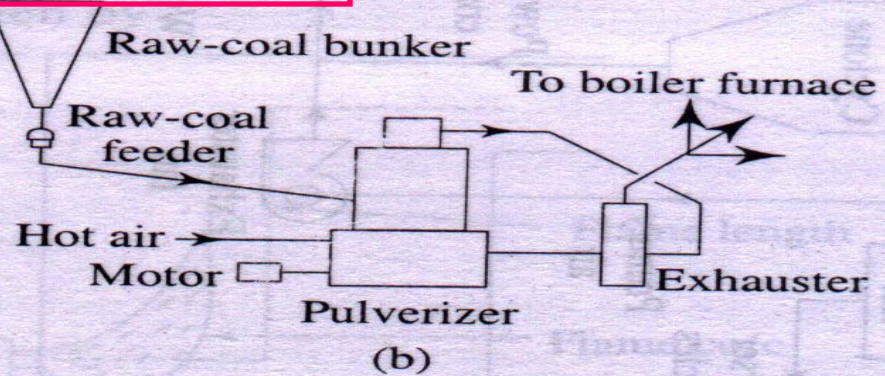
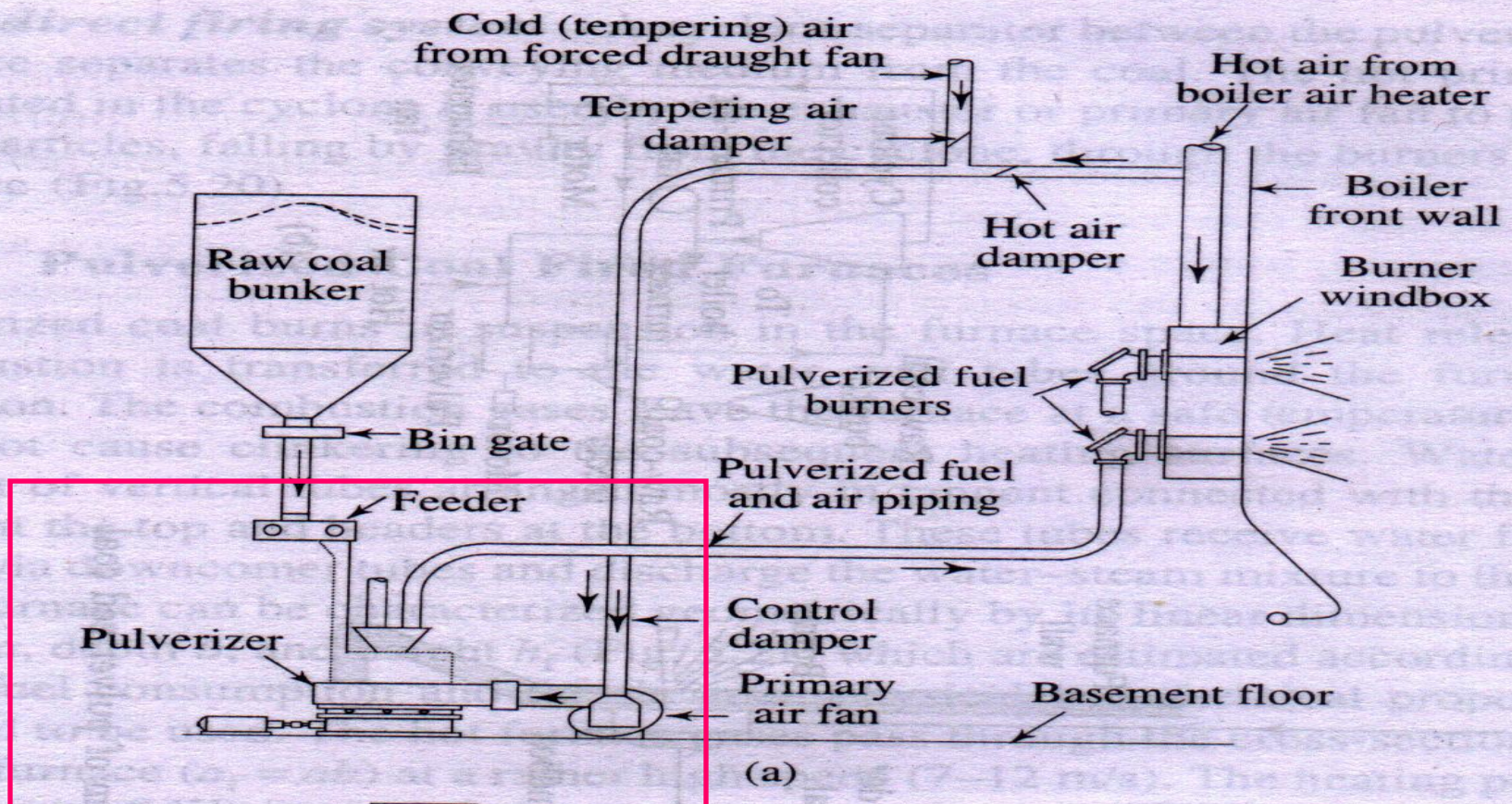


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INTRODUCTION

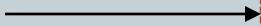


- A pulveriser is a mechanical device for the grinding of many different types of materials.
- Grinding mills use one , two or all three of the basic principles of particle size reduction namely impact, attrition and crushing.
- With respect to speed these machines may be classified as low speed, medium speed and high speed.

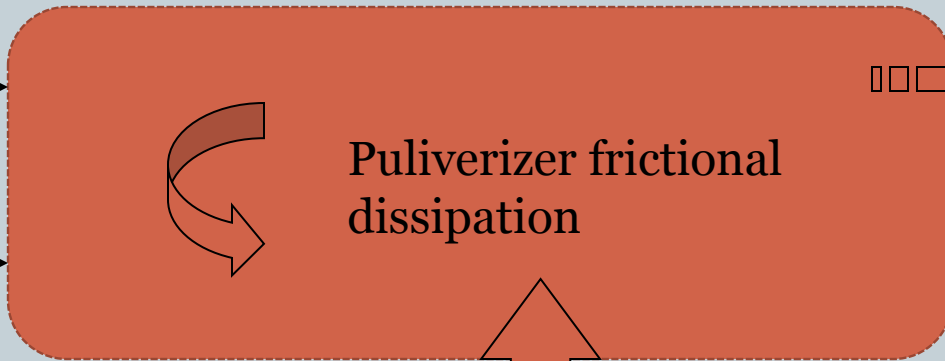




Hot air



Coal



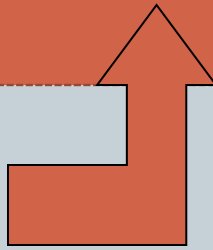
Pulverizer frictional
dissipation



Heat loss



Dry pulverized coal +
Air + Moisture



Motor Power Input

TYPES OF PULVERIZERS



- ball tube mills for pulverizing low-grade coal with high-ash content
- Bowl mills of slow and medium speed of capacity up to 100 t/hour.
- Hammer mills.

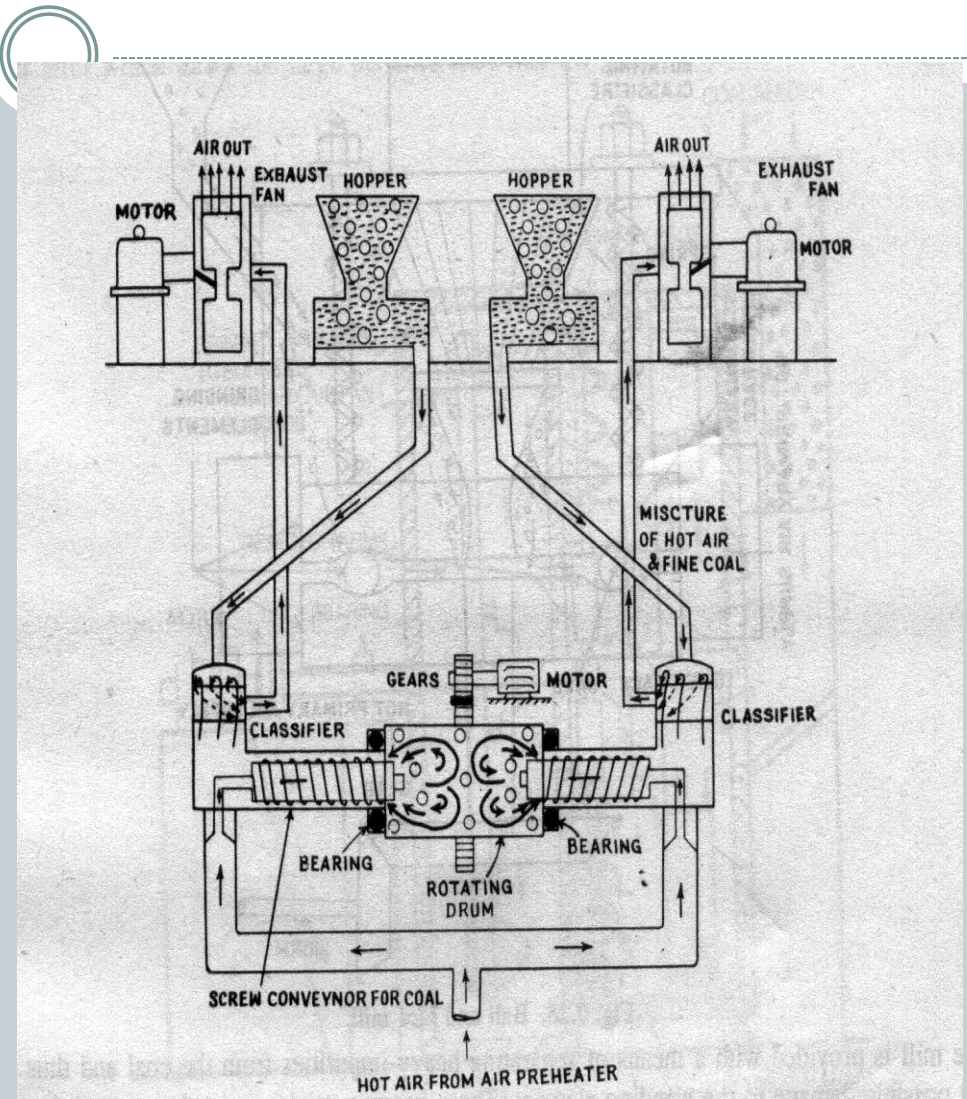
The characteristics of commonly used pulverizes are shown in the table:



Speed	Low 10 to 20 RPM	Medium 40 to 70 RPM	High 900 TO 1000 RPM
Type	Ball Tube Mill	Ring Roll Mill Ball and Race Mill Bowl Mill	Impact or Hammer Mill
Predomina nt Principle	Attrition	Crushing	Impact

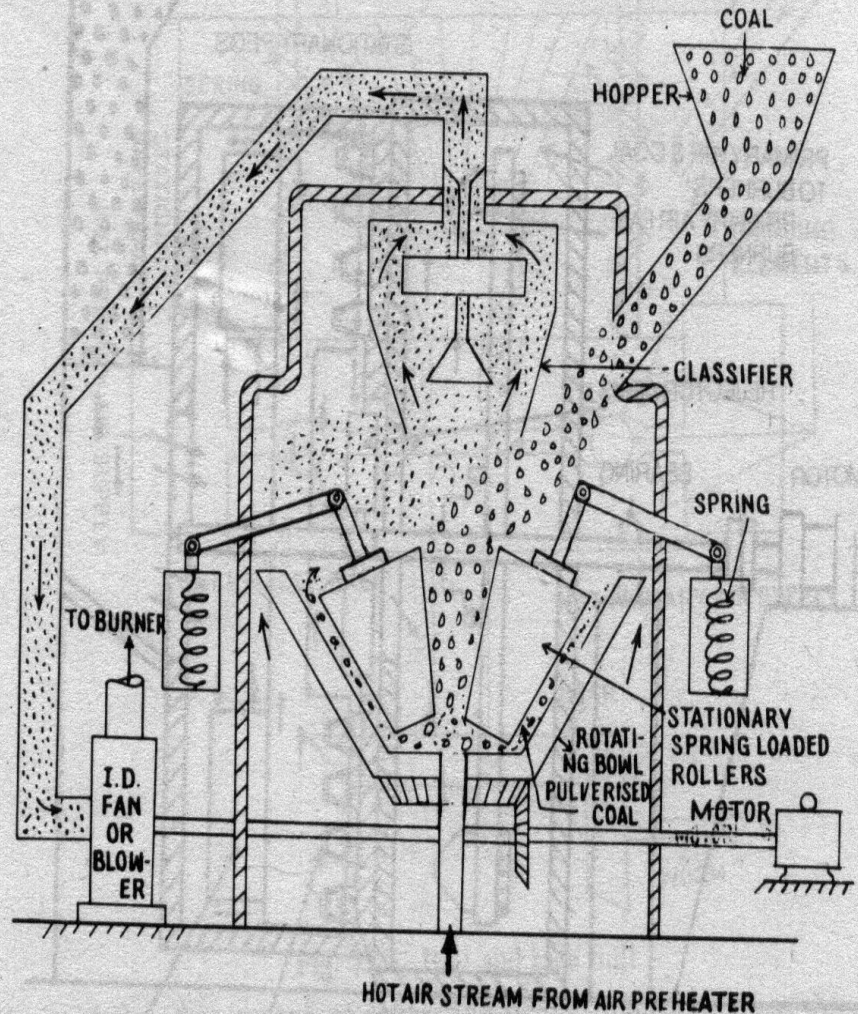
Ball & Tube Mill

- The oldest pulverizer design still in frequent use.
- 25% to 30% of cylinder volume is filled with wear resistant balls of 30 – 60mm.
- The cylinder is rotated at a speed of about 20 rpm.
- Specific power consumption 22 kWh per Ton.
- Suitable for hard coals.
- Highly reliable in requires low maintenance.
- Bulky and heavy in construction

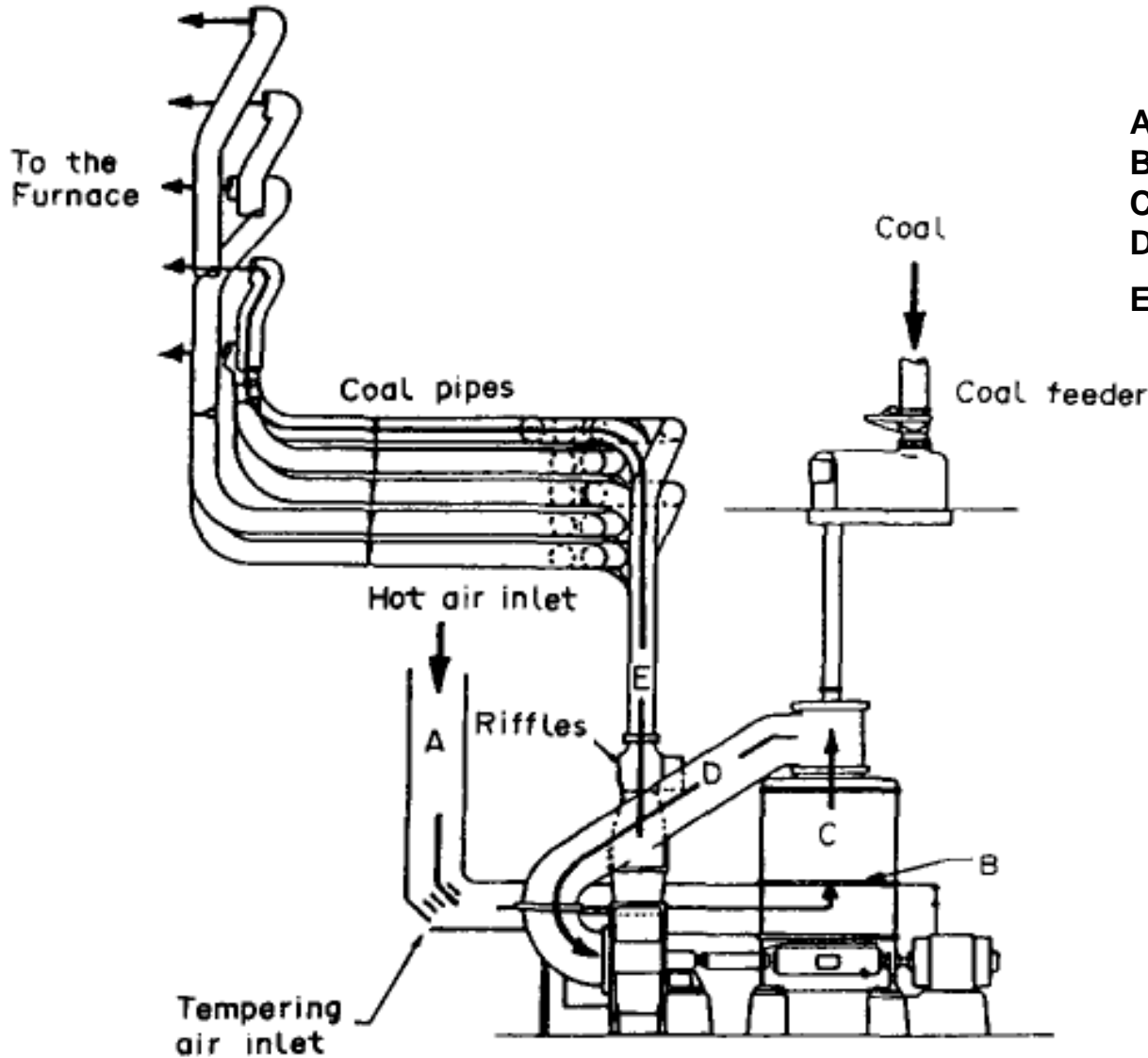


Bowl Mill:

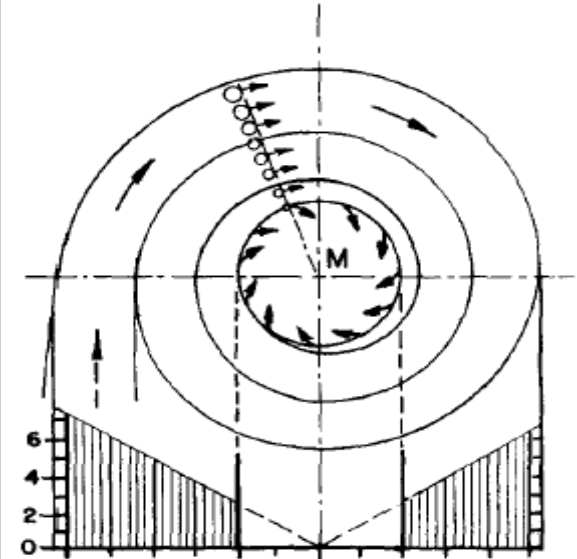
- The most widely used mill for grinding coal.
- The raw coal is fed into the center of the mill.
- This is an intermediate speed pulverizer.
- The vertical shaft rotates at a speed 30 – 50 rpm.
- Specific power consumption 12 kWh/ton.



Schematic of typical coal pulverized system



- A Inlet Duct;
- B Bowl Orifice;
- C Grinding Mill;
- D Transfer Duct to Exhauster;
- E Fan Exit Duct



Hammer mill

- Hammer mills are used for primary and secondary crushing of different types of material in almost all industrial sectors.
- Feeding materials are Hard coal and lignite in coal processing .
- The material passes through the feed opening into the striking arc of the rotating hammers.



Pulverizers manufactured at BHEL



- BHEL manufactures mills for pulverized coal fired Thermal and Industrial boilers.
- BHEL till date has manufactured over 1200 bowl mills and over 100 tube mills.
- The specific range - 583 XRP/XRS to 1043 XRP

Customers of the Products



Public sector customer:

- National thermal power corporation (NTPC)
- Nuclear power Corporation of india limited (NPCIL)
- State electricity board (SEB)
- Power Development Corporation limited (PDCL)
- Damodar Valley Corporation

Private sector customers:

- Arunachal Pradesh sugar mills



THANK U