

# Coal Combustion System Including Pulverizer

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⇒ Coal fire prevention–related combustion system for supplying pulverized coal at the coal–fired power plants

### Client / Market

- Power plants and energy facilities using pulverized coal and biomass as energy source

### Necessity of this Technology

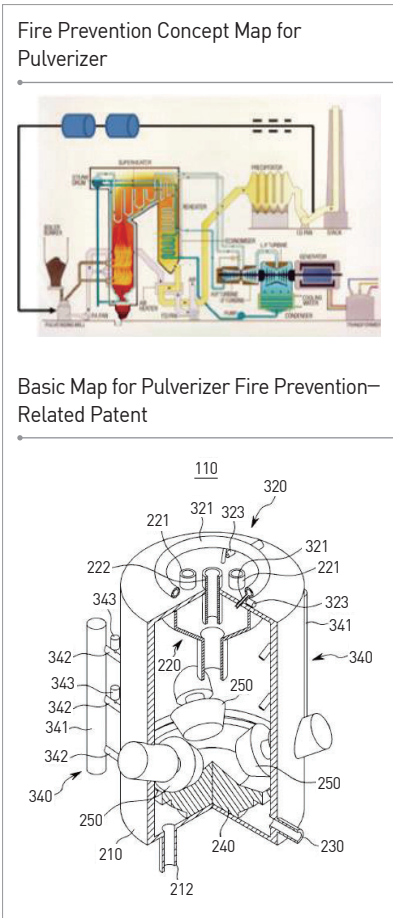
- The risk of fire if very high when pulverizing low rank coal or biomass.
- There is no fundamental method to prevent or control fire, and once the fire breaks out, steam or carbon dioxide is sprayed to the pulverizer to extinguish the fire.
- Due to the fire, a part of or entire power plant needs to shut down for a long time, and economic loss following the shutdown is very big.

### Technical Distinctiveness

- Secures safety of the operator from the pulverizer fire
- Controls economic loss from dust coal supply failure and power generation facility shutdown and extends the operation time
- Uses various coal types including low rank coal and biomass as fuel for generation
- Reduces the supplementary installation cost and operation cost for pulverizer fire suppression
- Specifies the locations in the pulverizer with higher change of fire outbreak, and focuses on controlling such areas using combustion gas with inactive properties
- Only some areas are subject to ignition in the pulverizer, and to control fire outbreak, the oxygen level in such areas is continuously controlled to prevent ignition in advance and maintain stable pulverizer operation.

### Excellence of Technology

- From the basic experiment result using a model pulverizer, by controlling the temperature change in the pulverizer following the concentration level of inert gas, fire outbreak is prevented beforehand as specified potential fire outbreak areas are controlled intensively.



### DESIRED PARTNERSHIP

Technology Transfer

Licensing

Joint Research

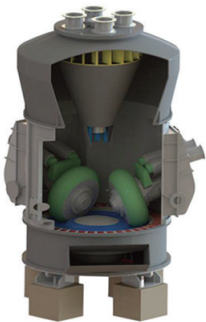
Other



### TECHNOLOGY READINESS LEVEL [TRL]

- |                             |                                     |                              |                       |   |                           |  |                                  |   |
|-----------------------------|-------------------------------------|------------------------------|-----------------------|---|---------------------------|--|----------------------------------|---|
| Research, basic explanation | Project concept or idea development | Technology idea verification | Prototype development | Trial product production/ evaluation in similar environment | Pilot field demonstration | Development and optimization of commercial model | Commercial product demonstration | Mass production and initial market launch |
|-----------------------------|-------------------------------------|------------------------------|-----------------------|---|---------------------------|--|----------------------------------|---|

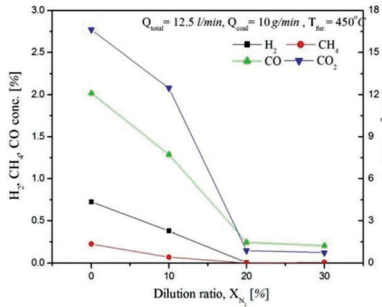
Image of Fire Outbreak in Pulverizer and Fire Control Using Inert Exhaust Gas



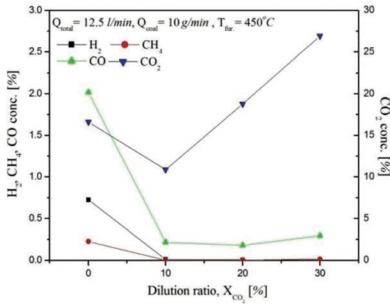
Pulverizer Design



Image of Fire Outbreak Moment in Pulverizer



(a) Using CO<sub>2</sub>



(b) Using N<sub>2</sub>

Fire Outbreak Control Effect Using Inert Exhaust Gas

### Current Intellectual Property Right Status

#### PATENT

- Pulverizer and Coal Burning System Having the Same (KR1355691)
- Pulverizer and Coal Burning System for Fire Prevention (KR1281062)