

What is Pulverized Coal Injection (PCI)?

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About Pulverized Coal Injection (PCI):

- PCI is a process which involves injecting large volumes of fine coal particles into the raceway of the blast furnace (BF).
- It is an **essential instrument** for **modern blast furnace ironmaking**.
- PCI **provides auxiliary fuel for partial coke replacement** and has proven both **economically and environmentally favourable**.
- It can result in substantial **improvement in the BF efficiency** and thus contribute to the **reduction of energy consumption** and **environmental emissions**.
- The composition and **properties of the coal** used for injection can **influence the operation, stability and productivity of the BF** and the composition of the BF gas.
- The PCI process system **constitutes six numbers of sub-systems, namely**,
 - **storage and discharge** of the raw coal;
 - **pulverizing and drying of the raw coal**;
 - transportation, storage and **supply of the pulverized coal to the injection system**;
 - uniform **distribution of pulverized coal to each tuyere**;
 - **combustion** of pulverized coal;
 - **explosion prevention** facilities;

What is a tuyere?

- A tuyere or tuyère is a **tube, nozzle or pipe through which air is blown into a furnace.**
 - Air or oxygen is injected into a furnace under pressure from a device such as bellows or a blowing engine.
 - This causes the fire to be hotter in front of the blast than it would otherwise have been, enabling metals to be smelted or made hot enough to be worked in a forge.
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Q1) What is a blast furnace?

A blast furnace is a construction designed to convert iron oxide into pure, molten iron through the application of heat and the presence of flux and coke. The furnace itself is a tall stack, often constructed from steel. At the bottom is an air heater and pump, which sends hot air into the stack in order to facilitate the numerous chemical reactions needed to convert the impure oxide into iron.

Source: [Key supplier. Russia overtakes Australia as top supplier of pulverised coal injection to India since September](#)

Source: <https://vajiramandravi.com/current-affairs/what-is-pulverized-coal-injection-pci/>

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