

## PCI+<sup>®</sup> V - Injection of pulverized coal

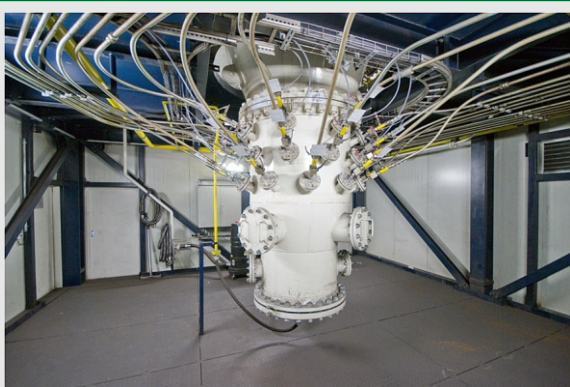
### Injection of pulverized coal into the tuyères of blast furnaces using a distributor vessel

PCI+<sup>®</sup> V is characterized by:

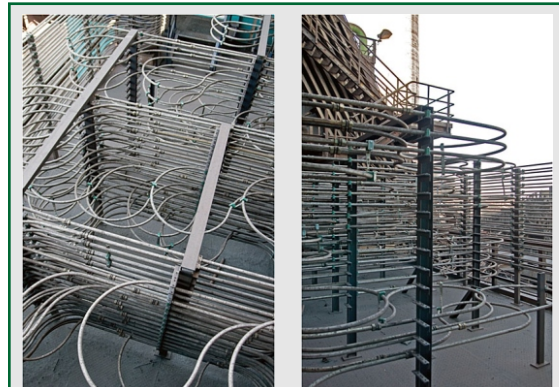
- ▶ Multiple dosing of pulverized coal from fluidized bed for uniform distribution over all injection pipelines
- ▶ Minimum wear and tear due to low conveying velocity
- ▶ High availability of the PCI+<sup>®</sup> V - installation of more than 99 %
- ▶ Very high specific conveying flow rate of more than 650 kg/cm<sup>2</sup>/h
- ▶ Trouble-free adaption to the blast furnace due to:
  - Small diameter of the injection pipeline (12 - 26 mm inner diameter)
  - Erection of the PCI+<sup>®</sup> V - installation in sufficient distance from the blast furnace (length of injection pipelines up to 150 m)
- ▶ Low nitrogen load of the blast furnace by PCI (10-20 Nm<sup>3</sup>/t injected pulverized coal)



*PCI+<sup>®</sup> V silo and blast furnace  
(in the background)*



*Distributor vessel with injection pipelines*



*Injection pipelines*

## Performance:

- ▶ Feasibility studies
- ▶ Basic- und detail engineering
- ▶ Performance test of pulverized coal in our laboratory
- ▶ Delivery, erection and commissioning of the complete PCI+® V - installation
- ▶ Training of the operation and maintenance personnel
- ▶ After sales service



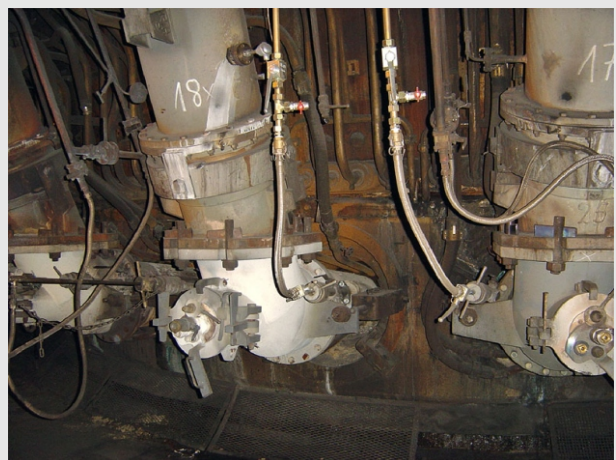
*Distributor vessel*



*Valve stand*



*PCI+® V installation  
in front of the blast furnace*



*Injection pipelines at the tuyères*

## PCI+<sup>®</sup> S - Injection of pulverized coal

### Injection of pulverized coal into the tuyères of blast furnaces using a static distributor

PCI+<sup>®</sup> S is characterized by:

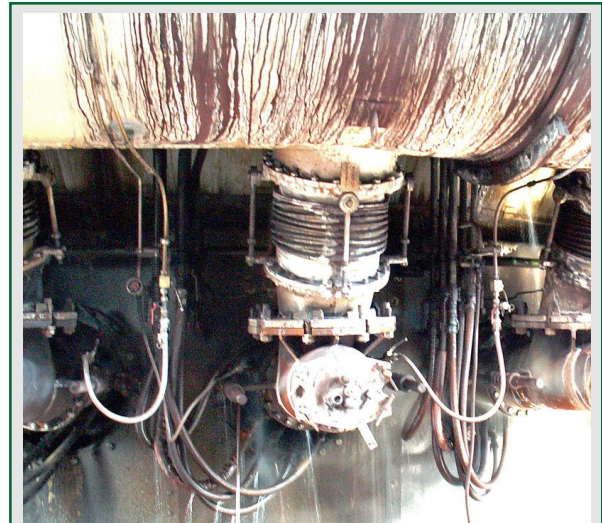
- ▶ Main conveying pipeline to static distributor with injection pipelines
- ▶ Minimum wear and tear due to low conveying velocity



- ▶ High availability of the PCI+<sup>®</sup> S installation of more than 99 %
- ▶ High specific conveying flow rate of more than 400 kg/cm<sup>2</sup>/h
- ▶ Trouble-free adaption to the blast furnaces due to:
  - Small diameter of the injection pipelines (12 - 26 mm)
  - Erection of the PCI+<sup>®</sup> S installation in High distance from the blast furnace (length of the main conveying pipeline up to 700 m)

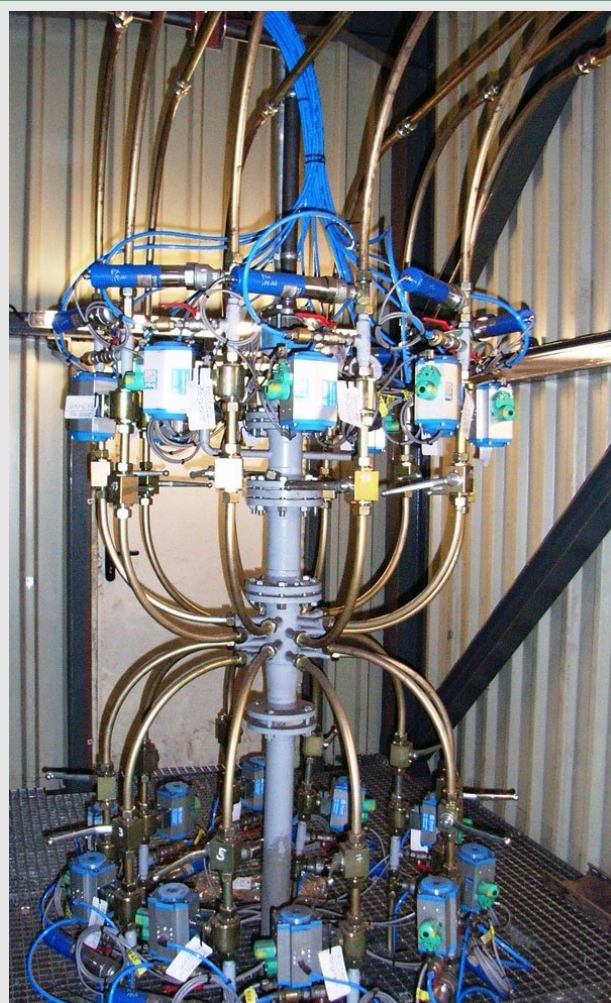
## Performance:

- ▶ Feasibility studies
- ▶ Basic- und detail engineering
- ▶ Performance test of pulverized coal in our laboratory
- ▶ Delivery, erection and commissioning of the complete PCI+<sup>®</sup> S installation

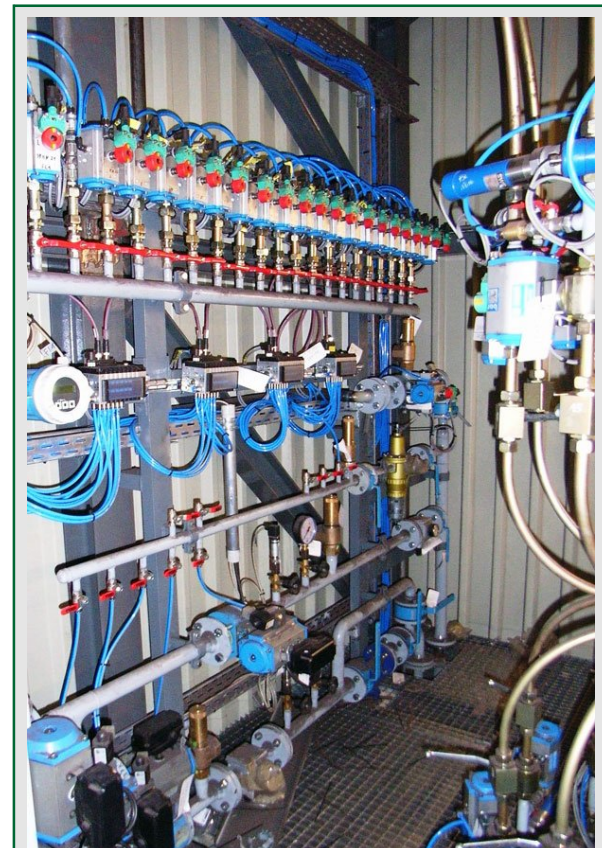


*Injection pipelines at the tuyères*

- ▶ Training of the operation and maintenance personnel
- ▶ After sales service



*Static distributor*



*Valve terminals*

## PCI+<sup>®</sup> VC Pulverized Coal Injection

Injection of pulverized coal into the tuyères of a Cupola by means of a vessel-distributor

PCI+<sup>®</sup> VC is characterized by:

- ▶ Vessel-distributor with single independent conveying pipelines based on the dense-phase pneumatic transport
- ▶ Multiple dosing of the pulverized coal out of a fluidized bed for equal distribution over all conveying lines
- ▶ Extreme small specific conveying rates possible (from 30 kg/h per single conveying pipeline)
- ▶ Minimal wear by low conveying velocities
- ▶ High availability of the PCI+<sup>®</sup> VC - equipment (nearly 100 %)
- ▶ Extreme high specific conveying rate (more than 650 kg/cm<sup>2</sup>/h)



*Intermediate conveying equipment*

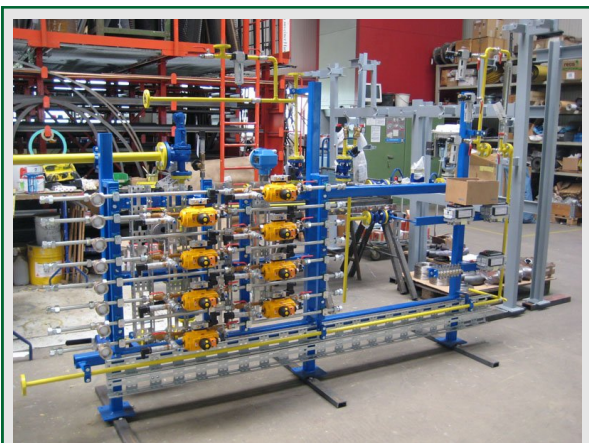


*Bottom of a vessel distributor with single conveying pipelines*

- ▶ Uncomplicated adaptation to existing Cupolas by:
  - Small diameter of the single conveying pipelines (10 - 14 mm internal diameter)
  - Erection of the PCI+<sup>®</sup> VC - Silo and intermediate conveying plant in large distances of the vessel-distributor (up to 500 m)
- ▶ Small required space for the vessel-distributor near by the Cupola
- ▶ Ultralow nitrogen - input into the Cupola (10 - 15 Nm<sup>3</sup>/t pulverized coal)
- ▶ Use of various pulverized coals and coal mixtures
- ▶ Use of Oxycoal lances for complete coal combustion

## Performance:

- ▶ Delivery of turn - key PCI+® VC - plants
- ▶ Commissioning
- ▶ After sales service
- ▶ Feasibility studies



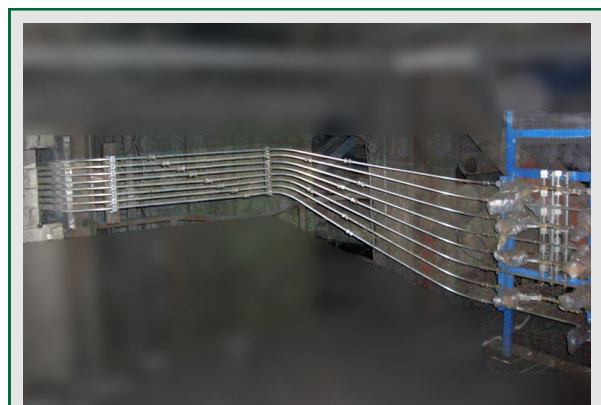
*Valve terminal single conveying pipelines*



*Distribution plant*



*Valve terminal intermediate conveying plant*



*Single conveying pipelines to the Cupola*

- ▶ Test of pulverized coal concerning pneumatic characteristics
- ▶ Basic and detail engineering
- ▶ Delivery of special equipment
- ▶ Training of operators and maintenance staff