The use of microwaves allows for stable measurement of the PCI flow!
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**General**

The MWS-MF-1 (Microflow) is installed on the coal feeding pipe of the blast furnace tuyere and measures the density and speed of the PCI in order to calculate and output the flow rate.

**Special Features**

1. **High accuracy, high reliability**
   - There is a very good linearity between the phase delay and density. Due to this, low density to high density will be measured with high accuracy.
   - The speed is calculated by the intercorrelated time difference in density between the upstream side and downstream side.
   - The sensor’s inner pipe is made of microwave penetrable ceramic to prevent abrasion and there is no protrusion in it.

2. **Continuous measurement can be easily performed.**
   - The density and the speed of the fine coal flowing in the pipe can be continuously measured because the sensor is installed in the pipeline.

3. **Convenient functions are built in**
   - The system can be set up, the status of operation can be monitored and parameters can be set with a standard laptop.
   - The monitoring of the density, speed and quantity of flow are available and can be output by 4–20mA analog output.
   - The flow calibration curve can be set and the zero reference point can be adjusted remotely.

**Principle**

The MWS-MF-1 (Microflow) is installed on the coal feeding pipe of the blast furnace tuyere and measures the density and speed of the PCI in order to calculate and output the flow rate.
## Specifications

1. **Type**
   - MWS-MF-1
2. **Power Supply**
   - DC24V±5%
3. **Measurement Method**
   - Microwave
4. **Frequency**
   - 24GHz
5. **Measurement**
   1. **Density**
      - 0～100kg/m³
   2. **Speed**
      - 0～20m/s
   3. **Flow**
      - 0～3t/h
6. **External Interface**
   1. **RS-485 Output**
      - For communication with PC
   2. **Analog Output**
      - Density, speed, flow 4-20mA/FS
   3. **Abnormal Output**
      - Relay output
   4. **0 reference update input**
      - Relay input
7. **Power Consumption**
   - Approx. 10W
8. **Noise Tolerance**
   - ±1.5kV
9. **Ambient Temperature**
   - -10℃～45℃
10. **Material Temperature**
    - 80℃(Max)
11. **Fine coal specifications**
   1. **Particle Size**
      - 200mesh pass 70～80%
   2. **Flow Quantity**
      - 20～80t/h (0.5～2.0t/h/pipe)
   3. **Fine coal density**
      - 0.5～0.65/m³
   4. **Solid/gas ratio**
      - 9～10kg/kg
12. **Enclosure Rating**
    - IP65 Equivalent
13. **Internal Pipe Pressure**
    - 1.18MPa
14. **Flange**
    - JIS10K32A
15. **Construction**
   1. **Internal**
      - Ceramic pipe
   2. **External**
      - SUS304 Pipe
16. **Weight**
    - Approx. 20kg

### Connector

**Connector terminal diagram**

- **TRXD+**
- **TRXD−**
- **SG (0V)**
- **TXD+**
- **TXD−**
- **SG (0V)**

- **RS 485**
  - For communication with PC

- **For measurement data transmission**

- **Measurement value analog output**

- **Abnormal output (± Semi-conductor relay)**
  - DC 30V 0.1A
  - Closed when normal, open when abnormal

- **Reference point input**
  - (No-voltage contact input)
  - D1 - 1: Zero reference point update
  - D1 - 2: Spare

- **Power supply**
  - DC 24V
Dimensions

The pipe diameter can be changed.

System Example

These specifications may be changed without notice.