Nippon Steel & Sumikin Engineering's Blast Furnace
We are the total engineering company from design to construction for ALL iron-making equipments of NSENGI's Blast Furnace.

NSENGI's Blast Furnace

- **Low FR Operation Technology**
- **High gas utilization**
- **High thermal efficiency**

- **Energy Saving Technology**
- **Effective Fuel Use**
- **Energy Recovery**

- **Stable Operation Technology**
- **Prevention of Energy Loss**

- **Center gas flow**
  - Low center pressure loss
  - Permeability of deadman
  - Uniform distribution in the circumferential direction
  - Uniform center of layer & Uniform layer thickness
  - Uniform particle size
  - Stable burden descent

- **Low humidity blast + PCR↑ (CR↓) (Tf=const.)**

- **High temperature blast + PCR↑ (CR↓) (Tf=const.)**

- **Optimum cooling for furnace part**

- **Effective combustion hot stove**
- **Top gas pressure recovery**
- **HS Waste Gas heat recovery**

- **Prevention of Reduction of blast volume or Emergency shut down**
- **Prevention of slag irruption into tuyere**

**BF SUPPLY RECORD** (Since 1964, Total: over 80 unit)

- **8 unit record (Since 1976)**

Nippon Steel & Sumikin Engineering have a lot of iron-making equipments supply record. We can accept your request widely.
Low FR operation technology
(FR is 5～10% down!! Production increase drastically!!)

① TOP CHARGING SYSTEM

- Anti-segregation technology
- Original hopper with rectifiable structure & material flow control valve enables uniform distribution in the circumferential direction of center of layer, layer thickness and particle size
- Uniform center of layer & Uniform layer thickness

② COOLING SYSTEM

- Furnace wall cooling technology
- 3 Zone cooling enables control of furnace wall temperature for furnace condition and aim of cooling
- A) Heating zone
  - Low cooling for keeping temperature of burden high
- B) High heat load zone
  - Strong cooling for keeping inner-furnace profile and scab
- C) Hearth zone
  - Rib shape for keeping scab
  - High cooling capacity
  - No Weld
  - Lightness in weight

※1 FR: Fuel Ratio (RAR)  ※2 Above FR reduce rate is 550～560kg/thm condition.
Energy saving technology
(Saving Energy is 2.5\times10^5\text{bbl/year}!!)
※equivalent in oil

Stable operation technology
(Prevention of energy loss)

CAST HOUSE EQUIPMENT

HOT METAL POT
cover traverser
TAPHOLE OPNER
Anti-jamming control
MUD GUN
Adapting hard mud
Tapping time is 70\%UP
Low risk of slag irruption into tuyere

Stable Tapping

GOOD

BAD ①

BAD ②

Opening by 1 time & Stable opening hole ⇒ Discharge accelerated velocity SMALL

Failure of opening by 1 time ⇒ Discharge impossible by long tapping work

Temporal opening diameter change: LARGE ⇒ Discharge accelerated velocity LARGE

METARIC BURNER enables drastic improvement of mixing efficiency.

Low unburnt CO: Conventional HS ratio is 1/10

Temperature of HE-1 outlet is controlled by heat transfer medium flow control valve(XV-1), for over acid dew-point at any time.
⇒ High-efficiency recovery of waste gas energy
⇒ Additional heater enables mono-combustion of BFG.

More than 40\% DOWN by installation

Fuel:

TRT output: wet type ratio 30\%UP

Low energy loss of furnace ⇒ top gas (temperature & pressure)

Above energy saving is based on 5000m^3 class Blast Furnace.