

# Smelting Plant Applications

The heart of the smelting plant – the blast furnace, manageable and operating efficiently with Schenck Process weighing technology



## Weighing technology for heavy-duty train cars

### Torpedo Ferry Scales

Torpedo ferry scales transport molten pig iron from the blast furnace to the steel mill or to external plants. The weighing devices check fill weight, trace materials, and assist with billing.

Schenck Process offers several different solutions for different train-car layouts:

- ☑ Load receptor built into the car using RTN load cells or DWB weighbeams (A)
- ☑ Track scale with DWB weighbeams between the rails and the sleepers (B)
- ☑ Conventional rail weighbridge(s) for one bogie/the entire car (C)
- ☑ Static and dynamic weighing, up to 1200 t [metric] total weight, with extreme accuracy

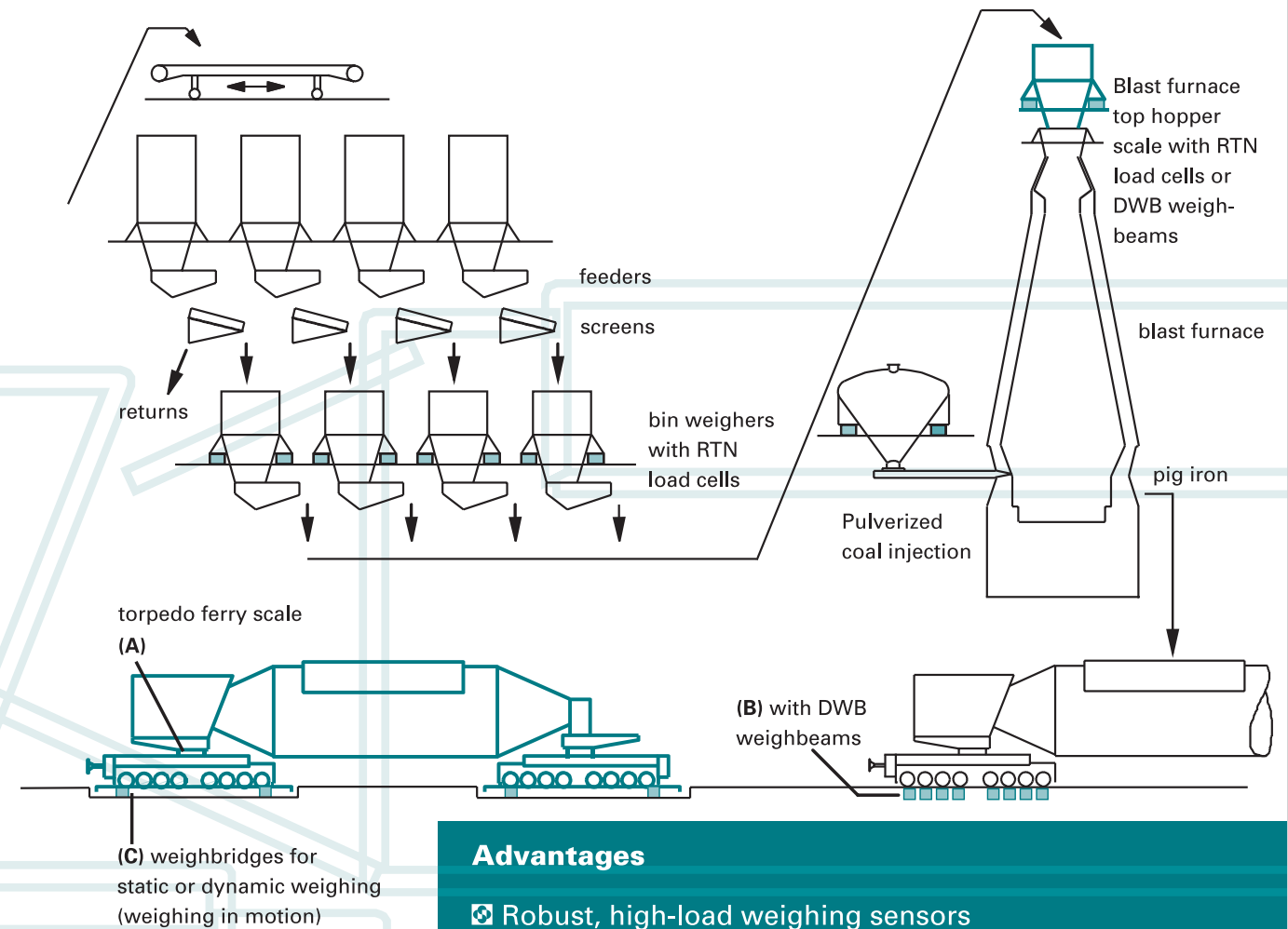
## Special Blast Furnace Requirements

### Blast furnace top hopper scales

Blast furnace top hopper scales are used for automatic blast furnace charging. The scales must work precisely during charging at atmospheric pressure as well as during emptying under flue gas counterpressure.

Schenck Process offers proven solutions:

- ☑ Load receptor using RTN load cells for a bin pretensioned by springs
- ☑ Load receptor using DWB weighbeams without springs and guides
- ☑ Weighing electronics with integrated pressure compensation



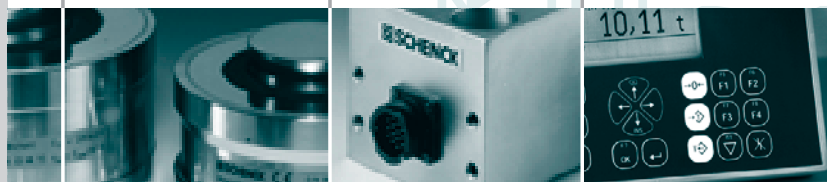
## Advantages

- ☑ Robust, high-load weighing sensors
- ☑ Screwed integrated weighbeam technology
- ☑ Stable weighing mechanics solutions

More about load cells on pages 122–123

More about weighbeams on pages 122–123

More about weighing electronics on pages 124–135



# Steel Mill Applications

Pig iron is turned into steel. Using scrap in the electric arc furnace with the help of heavy-duty weighing technology



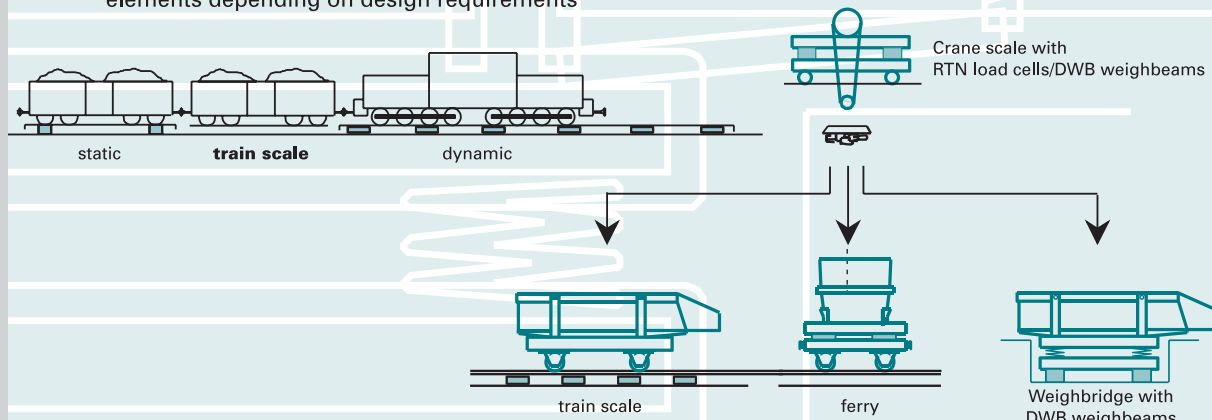
## Scrap Yard: Compiling Scrap

### Scrap Yard Weighers

Scrap yard weighers help to compile scrap in accordance with the pig iron specifications. These types of weighers have to work very precisely for a long time under high dynamic loads.

#### Schenck Process system solutions:

- ☑ Load receptor using the double-frame principle in the scrap charging crane trolley with RTN load cells
- ☑ Weighbridges with RTN load cells/DWB weighbeams for the rail car
- ☑ Weighing track with DWB weighbeams between track and sleeper
- ☑ In-car load receptor with RTN load cells/DWB weighbeams
- ☑ Stationary scrap charging box scale with RTN load cells/DWB weighbeams, with or without spring elements depending on design requirements



More about RTN load cells on pages 122–123

More about DWB weighbeams on pages 122–123

More about crane scales on pages 100–105

More about DISOMAT® B plus on pages 128–129

More about train scales on pages 84–91



## Smelting, alloying and transporting with Schenck Process weighing technology under the harshest conditions

### Crane Scales

For example, ladle transport cranes handle molten pig iron/crude steel and pour it into the converter. The weighing device is needed to determine the material charge.

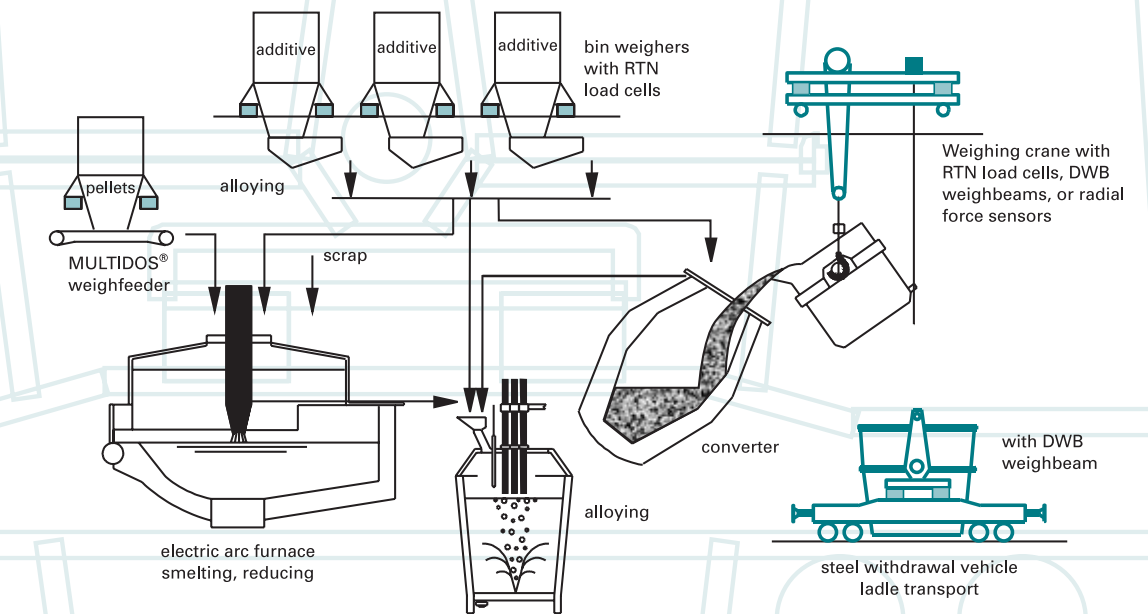
#### Schenck Process solutions for the main lift:

- ☑ Load receptors using the double-frame principle in the crane trolley with load cells/weighbeams
- ☑ Load receptors in the cross beam using
  - RTN load cells
  - DWB weighbeams
- ☑ Load receptors using the hook block principle using
  - RTN load cells
  - DWB weighbeams

#### Schenck Process solutions for the secondary lift:

- ☑ Load receptors using the double-frame principle with RTN load cells
- ☑ Use of measuring axles in the deflection pulley bearing

#### High-precision two-channel DISOMAT® weighing electronics



### Steel Withdrawal Vehicles

Steel withdrawal vehicles transport molten crude steel from the converter/ electric furnace to the secondary metallurgy. The weighing device is used to determine the exact quantity of crude steel.

#### Schenck Process system solutions:

- ☑ In-car load receptors using the double-frame principle with RTN load cells
- ☑ In-car load receptors using short weighbridges with DWB weighbeams

The wide range of Schenck Process sensors available allows for optimal adaptation to specific crane or ferry designs.

## Advantages

- ☑ Robust, high-load weighing sensors that can handle dynamic loads
- ☑ Screwed integrated weighbeam technology
- ☑ Stable weighing mechanics solutions

# Applications in Steel and Rolling Mills



## Scales in Continuous Casting Plants

In the continuous casting plant, molten steel is cast into continuous semi-finished strands. Weighing devices are used in the ladle turret, the tundish, and the roller conveyor for weighing and process control.

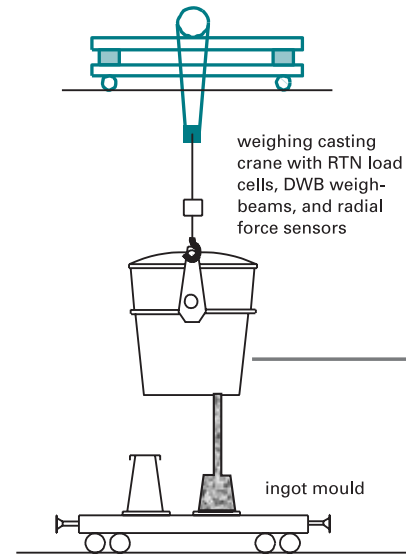
### High-capacity ladle turret solutions:

- ☑ Load receptors with short weighbridges using RTN load cells
- ☑ Load receptors with short weighbridges using DWB weighbeams for ambient temperatures up to 150 °C (302 °F)

### Two-channel DISOMAT® weighing electronics

#### Precise solutions for the tundish:

- ☑ In-car load receptors using RTN load cells/DWB weighbeams or
- ☑ Load receptors using RTN load cells/DWB weighbeams as train scale (custom version)



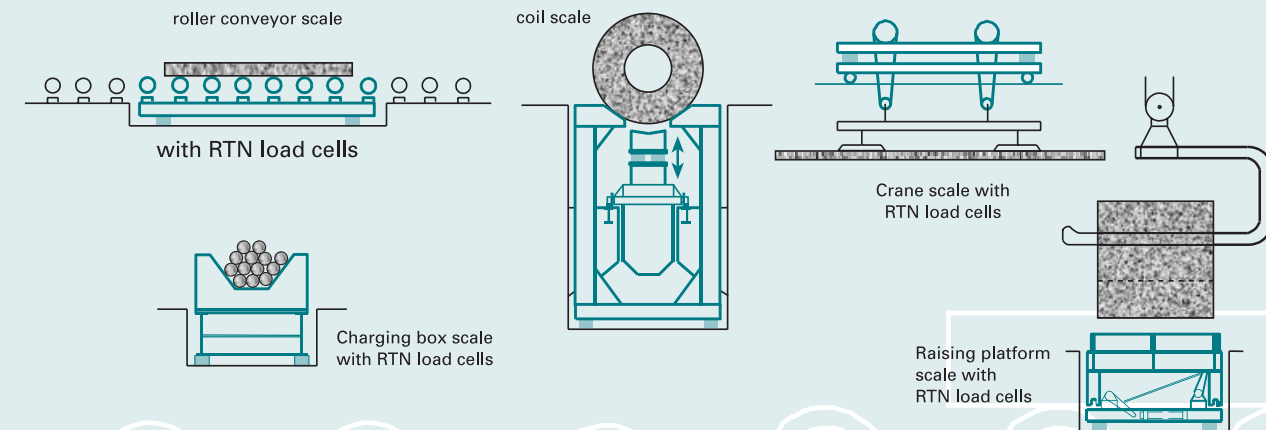
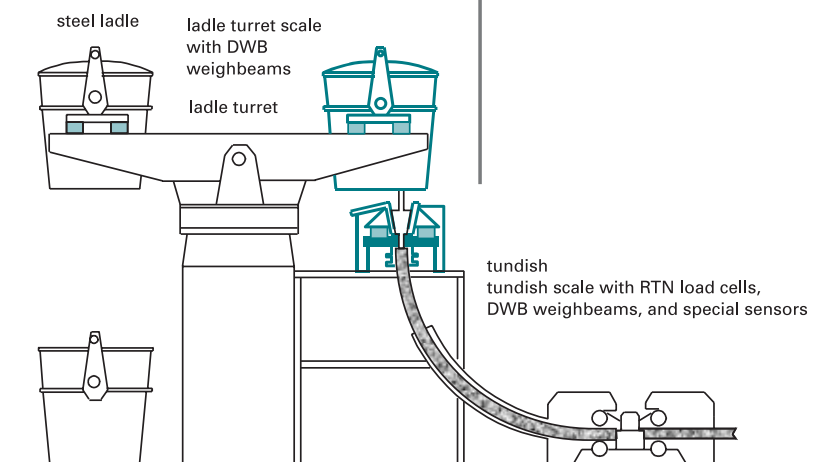
## Casting Plant: Casting, Moulding

### Casting Plant Scales

Casting cranes pour steel into ingot moulds. The weighing device is necessary to determine the exact casting weight and casting speed.

#### Schenck Process system solutions:

- ☑ Load receptors using the double-frame principle in the crane trolley with RTN load cells or DWB weighbeams
- ☑ Load receptors in the cross beam using RTN load cells, DWB weighbeams, and radial force sensors
- ☑ DISOMAT® weighing electronics with casting speed recording and display, radio data transmission



## Rolling Plant: Rolling, Forming

### Our rolling conveyor scale solution:

- ☑ Weighbridge solution using RTN load cells without tie rods.

### Rolling Plant Scales

Rolling plant scales without tie-rods are used to weigh materials legal-for-trade as basis for billing steel purchasers.

### Our solutions using the weighbridge concept with legal-for-trade RTN load cells:

- ☑ Coil scales
- ☑ Crane scales
- ☑ Raising platform scales
- ☑ Charging box scales
- ☑ Roller conveyor scales

**DISOMAT® state-of-the-art evaluation electronics that comply with EU calibration requirements for precise invoicing of steel by weight.**

## Advantages

- ☑ Large selection of reference systems
- ☑ Stable weighing mechanics solutions
- ☑ Cutting-edge electronic weighing systems with fieldbus technology

More about load cells on pages 122–123

More about weighbeams on pages 122–123

More about weighing electronics on pages 124–135

