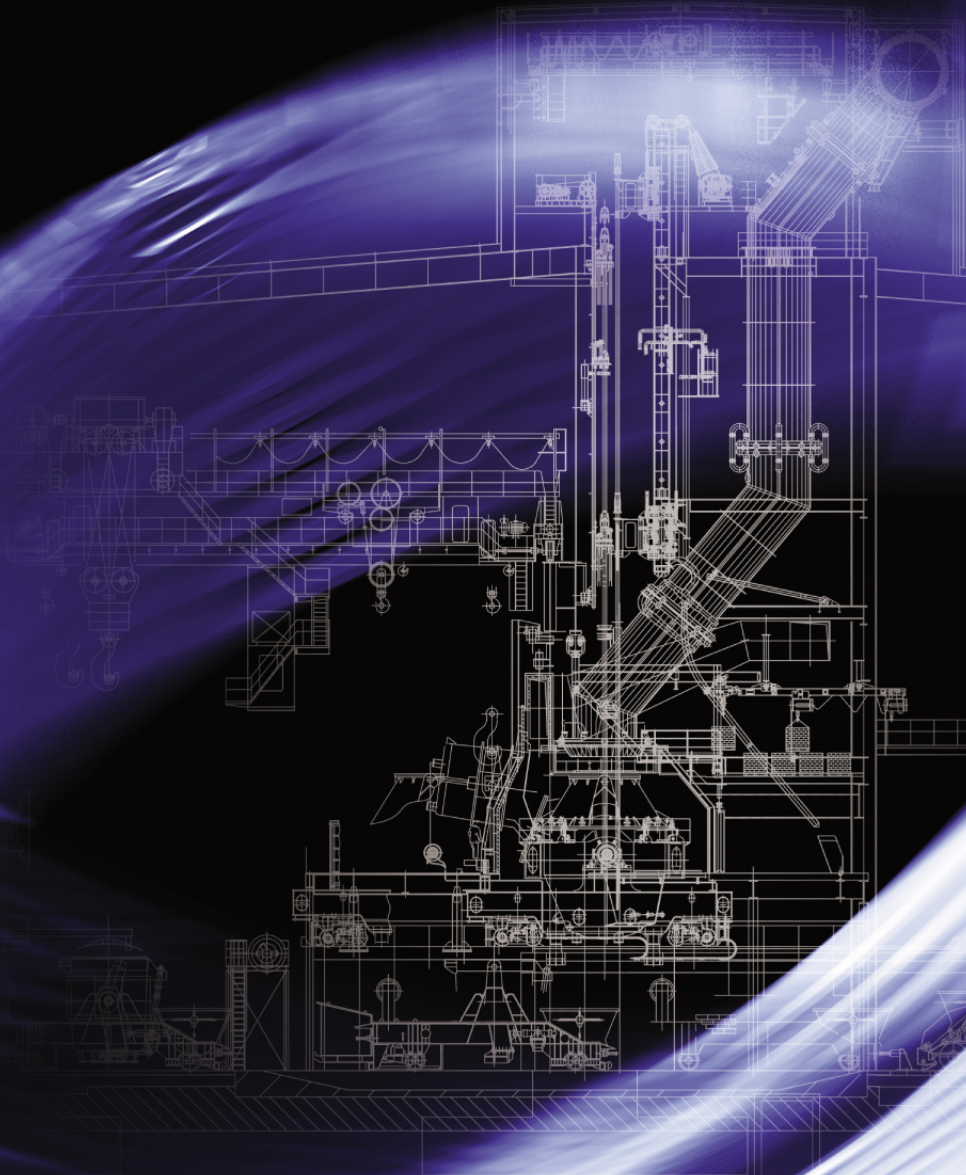


Dream of Human-Oriented Technology

Sublance System



WOJIN INC.

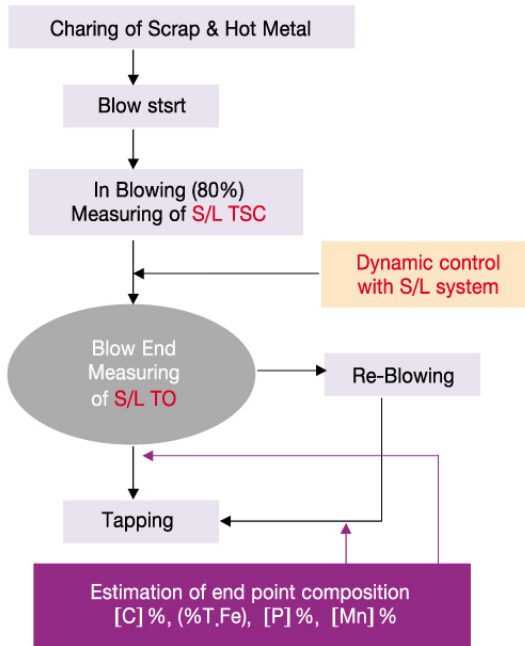


Sublance System

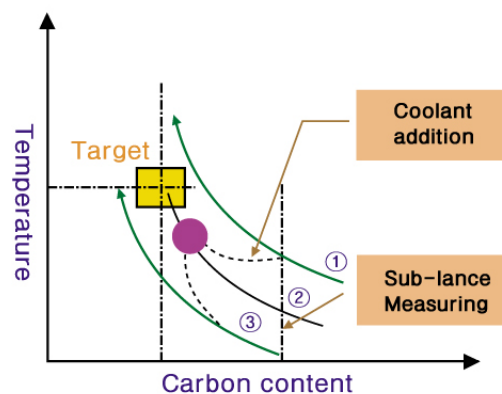
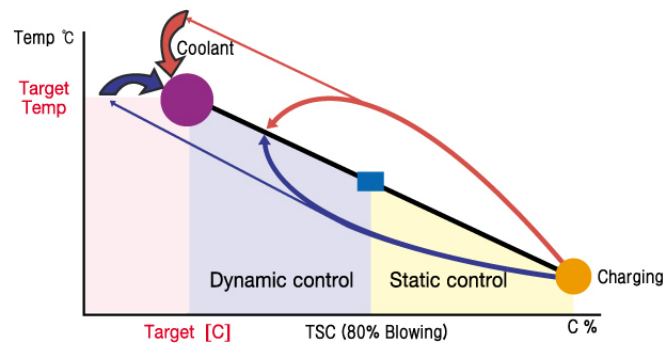
Analysis of molten steel has become more important to catch up with strong demands about improvement of productivity and production of high quality steels. The sublance system enables steel makers to control the amount of inputting oxygen and sub-materials through precise measurements and data collections.

1. Dynamic control system

As the dynamic control system accurately measures temperature, amount of oxygen and carbon in molten steel at the point of 80% of blowing oxygen, it makes operating time shorten and increase quality of steels by forecasting the final data.



Flow chart of Sublance Measuring at the Normal Process



Dynamic control diagram

Sublance System

Sublance System

2. Mechanical Parts

1 Sublance guide / Sublance carriage / Sublance body

The Sublance carriage vertically moves along with the Sublance guide equipped with the Sublance body by the Hoisting unit. Also immerses the probe, which is transferred from the probe loading device and automatically operates to measure temperature and collect samples in molten steel.

2 Sublance hoisting unit

The sublance hoisting unit is a device for vertical movement of the sublance and consists of an AC motor, a brake, a wire rope drum and a reducer. In emergency the sublance is carried to the home position by the air motor.

- ▶ Speed
 - a) Normal : approx. 0~180m/min
 - b) Emergency Lifting : approx.5m/min
- ▶ Position accuracy: approx. ± 20 mm

3 Probe storage

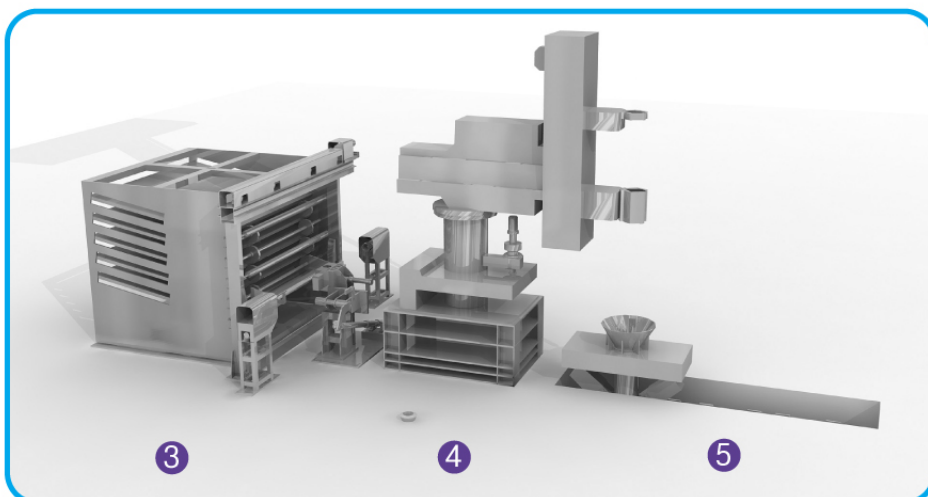
The probe storage consists of several loading chambers which can store different types of probes. Also shortage of probes can be checked through sensors in loading chambers.

4 Probe loading and unloading device

The probe loading device is for attaching a probe from the probe storage to the holder at the end of the Lance. The probe unloading device is for removing the used probe from the holder after measurement.

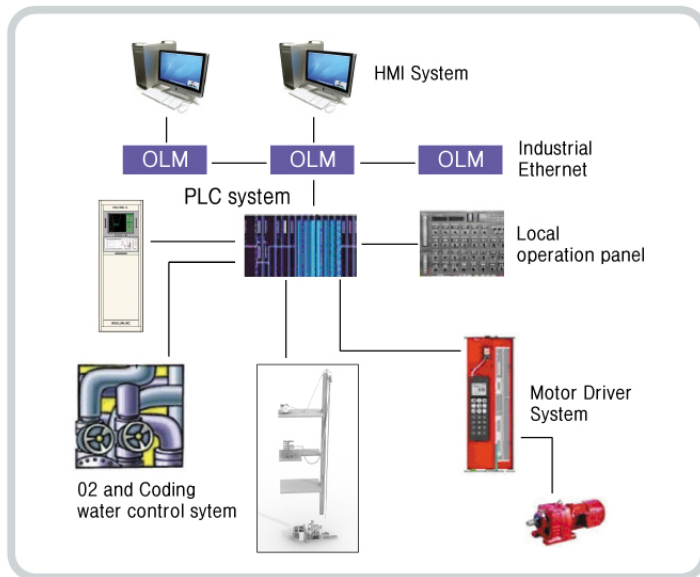
5 Slide gate

The slide gate is equipped to the hood which is located above the converter. At the measurement, it is open to make the sublance descended in the converter.



Mechanical Part

3. Electrical parts



PLC system

The programmable logic controller is for controlling all of the operations in the sub-lance system and interlocking between other various mechanical parts properly.

Motor drive system

The motor drive system is for controlling operation, speed and location of the lance.

Local operation panel

At local work site, it separately controls specific mechanical operations and functions.

Valve station for Sub-lance system

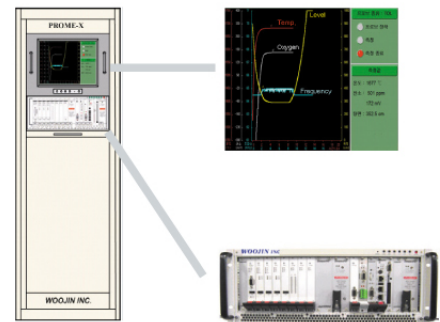
The valve station consists of various types of valves, instruments, and pipes to control cooling water and nitrogen gas.

4. Probe signal processor

The probe signal processor is a device to calculate temperature, oxygen, carbon and bath-level through data measured by a probe.

probe

- Bath-level of molten steel.
- Temperature, sampling and amount of carbon (TSC probe) in blowing oxygen process
- Temperature, sampling, amount of carbon and bath-level. (TO, TOL, TCO probe) at the end of blowing oxygen process



5. Stability of operation

Emergency lifting

In emergency such as electric off and unusual operation, the sub-lance carriage is carried to the home position by the air motor.

Emergency brake

In case that the sub-lance carriage is dropped due to wire cutting, the emergency brake mechanically makes it stop falling.

6. Advantages and features

- ▶ Accumulated engineering know-how and experience as one of the superior suppliers in the steel industrial field for over 2 decades.
- ▶ Minimization of troubles at site due to various types of trial tests before setting up at work site.
- ▶ High quality equipment optimized at client's requirement.
(Certified as Excellent partner for last five years from POSCO and POSCO E&C)