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Satyendra December 16， 2015 0 Comments on Steelmaking， BOS， Bottom Blowing， Combined Blowing， Converters， Heat， LD Converters， LD Gas， Stratified Combustion， Steelmaking， Top Blowing

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Basic oxygen steelmaking (BOS) is the process of making steel by blowing pure oxygen (O2) into a tank of liquid metal contained in a vessel known as a basic oxygen furnace (BOF)， LD converter， or simple converter.

The history of steelmaking began in the 19th century when Reaumur in France in 1772， Kelly in the United States in 1850 and Bessemer in England in 1856 discovered how to improve pig iron by controlling the carbon content of iron alloys to actually become steel. Reaumur， as a chemist， was driven by scientific curiosity， while Kerry and Bessemer， as engineers， were responding to the industrial revolution， including looms， steam engines， machines and railroads， which demanded larger quantities and better quality steel. This began the dialectic between science and technology when the basic concept of refining hot metal (pig iron) by means of carbon dioxide (C) in a liquid bath was invented.

This was a radical change from the gas-solid reaction in the shaft furnace (the predecessor of the blast furnace， where iron ore was reduced with charcoal)， or from the iron pit (forging and refining technology in the solid state)， a change that is not available in today's times.The second half of the 19th century was marked by an impressive intensity of innovation， which brought about a paradigm shift. The Bessemer converter， which appeared in 1856 to make steel， and the open hearth furnace， which melted scrap in addition to refining hot metal， were discovered only in 1865， nine years after the Bessemer converter， while the basic Thomas converter was discovered 12 years later， in 1877. The Thomas converter uses air to refine liquid metals.

The air-blown converter， invented by Bessemer in 1856， is considered the first modern steelmaking process. in 1877， the Thomas process， a modified Bessemer process， was developed to allow the treatment of liquid iron with high phosphorus. In the Thomas process， phosphorus (P) is oxidized in a so-called "back-blow" after most of the C has been removed from the melt pool. The open hearth process， also known as the Siemens-Martin (SM) process， was developed almost simultaneously with the Thomas process. The bright furnace process uses regenerative heat transfer to preheat the air used in the burner， which can generate enough heat to melt and refine solid scrap and hot metal in the reverberatory furnace. Around the 1950s， when basic oxygen steelmaking was on the horizon， steelmaking was primarily based on the open hearth process technology. Hot metal and scrap were loaded into large horizontal furnaces， and burners provided energy for scrap melting. Oxygen (O2) lances were used to increase the efficiency of the burners and to remove carbon and silicon (Si) from the hot metal. The open hearth process is an all-heat process， so external energy must be supplied to the furnace. For 200 to 250 tons of heat in liquid steel， a typical point-to-point time is 8 hours.

The next major innovation in steelmaking， immediately after the invention of electricity， was the electric arc furnace (EAF) steelmaking process. The electric arc furnace was introduced by Heroult around 1900 in the Alpine valley near the source of new energy sources， as long-distance power transmission was not feasible at that time. eaf technology was based on the development of an energy source that could replace coal and melt scrap steel in larger quantities than open hearths. the eaf steelmaking process is credited with initiating the circular economy.

The concept of BOS dates back to 1856， when Henry Bessemer patented a steelmaking process involving oxygen blowing to decarbonize the iron (British Patent No. 2207). At that time， there was no way to provide the amount of O2 needed for the process. Commercial quantities of oxygen were simply unavailable or too expensive， so Bessemer's invention remained on paper and was never used. steelmaking by blowing pure oxygen became practical in 1928 when the Lind company succeeded in developing a method for supplying pure oxygen in large quantities (the Lind-Fr?nkel process). Due to the success of the Lind-Fr?nkl process， oxygen also became so cheap that the two prerequisites for the introduction of the BOS process (a large supply as well as the availability of cheap oxygen) were both met.

In Europe and the USA， experiments with O2 were repeated. Among those who used high-purity oxygen was Otto Lellep， but his concept of "blowing oxygen vertically onto a liquid iron bath" proved to be unsuccessful. According to Hubert Hauttmann， he participated in Lellep's experiments at the Gutehoffnungshütte between 1936 and 1939， when he was employed by the company whose purpose was to convert iron by blowing pure oxygen through a nozzle at the bottom of the converter. The quality of the steel produced in this way was poor.

During the Second World War， engineers such as C.V. Schwarz in Germany， John Myers in Belgium， Dürer Switzerland and Heinrich Heilbrügge in Germany presented their version of oxygen blowing， but only Dürer and Heilbrügge brought it to the level of mass production.

Carl Valerian Schwarz filed a patent application in 1939 for blowing oxygen into the melt pool at supersonic speed. But this method also "could not yet produce usable steel". Although the later Linz-Donawitz (LD) process had similarities to Schwarz's patent， its typical features were different (e.g. "central vertical blowing"). It must have been due to the outbreak of the Second World War that the technology described in the Schwarz patent did