



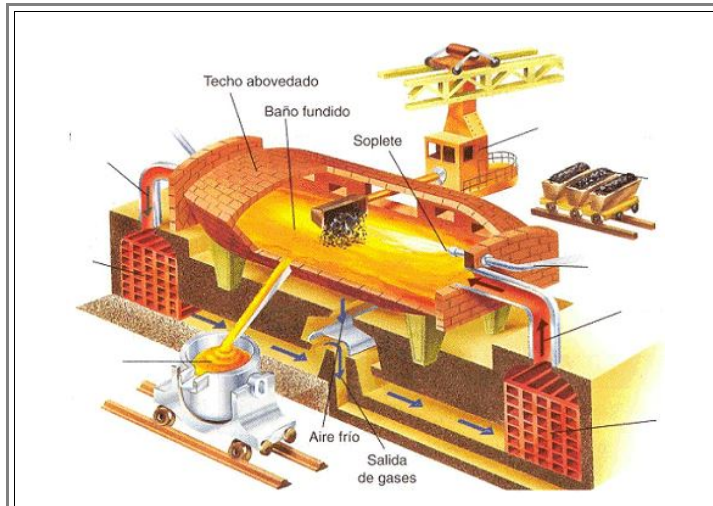
# Steel Revolution



## 3. The Siemens - Martin Process

There isn't much more I can say about the [Siemens brothers](#), the [Martins](#), or the Siemens-Martin regenerative [open hearth furnace](#) on top of what you find in the links.

- The "details" and how it developed easily fill a book. So I just show some pictures instead. Here is a nice schematic drawing that shows the operation quite clearly (if very simplified):



**Siemens-Martin process**

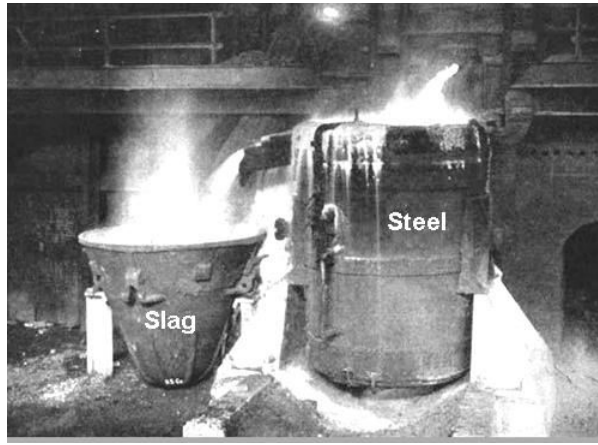
Source: Internet

- Here is the real thing



**Charging a Siemens-Martin furnace**

Source: Internet at large; origin of picture unclear.

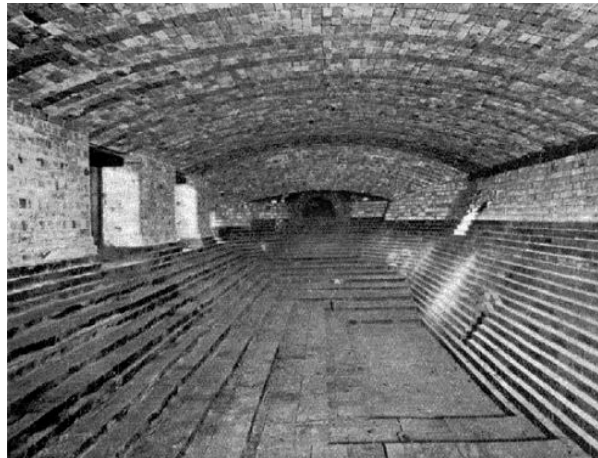


**Tapping a Siemens-Martin furnace**

Source: Internet

It is clear that for tapping you needed an opening that could be opened and closed from the outside - with liquid iron in the inside. Not an easy thing to construct and I don't know how it was done.

Below is picture of an actual hearth from the Clydebridge steel works in England, now a kind of museum. Unfortunately, the tapping mechanism is not shown.



**The hearth of a (big) Siemens-Martin furnace**

Source: Clydebridge Iron Works Museum site

Finally , a modern Siemens-Martin furnace - actually the last of its kind. It's shown in the Industry Museum in Brandenburg an der Havel, Germany. When it closed down in 1993, the era of the Siemens-Martin furnace was finally over.



## The very last Siemens-Martin furnace

[Large size](#)

Source: From the Internet pages of " Peter-Berlin" Berlin, Deutschland.  
Thanks, Peter!

Are there any problems with the Siemens-Martin process? You bet. It is too slow. Good old Bessemer / Thomas could transform 5 tons of pig iron to steel in 30 minutes! Siemens-Martin, with all its advantages couldn't beat that. Making 300 ton or so at one go is nice - but it takes time and is not very flexible. So find a way to keep the advantages of the Siemens-Martin process but with the speed of the old Bessemer / Thomas process.

That is what [oxygen blasting](#) or the [electric arc furnace](#) processes do (up to a point). A kind of renewed Bessemer - type of processing, just with oxygen instead of air and all the modern real-time analytics implemented, simply is cheaper per ton of steel produced.