STEELMAKING

PERT KNOWLEDGE MEMBER

DEDUSTING AND DEPURATION PLANTS

PERTECO ENVIRONMENTAL TECHNOLOGIES

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For each ton of tapped steel produced, average figures from 10 to 30 kilograms of dust are produced.
(source: "Production of Iron and Steel" – IPPC European Commission, February 2008).

These numbers are strictly linked to the around conditions, such as EAF technical characteristics, quality characteristics of the scrap and of the secondary metallurgy processes.
These are very high values and for this reason meltshops need dedusting and filtration systems purposely studied to obtain the reduction of these pollution substances. On the contrary, these substances would be scattered in the atmosphere with heavy consequences on the environment and on the health of the population and of the staff.
Our mission is to **help our Customers** to reduce the environmental consequences and protect people's health at an attractive cost.
This cost includes energy, maintenance operations and obviously the first investment.
The most important goals are to **respect the environmental thresholds**, to obtain high reliability, to guarantee low maintenance and low energy consumption and, of course, to respect the furnace and secondary metallurgy technical requirements.
The easiest way to obtain this is through a close collaboration with the Customer.
PERT*ECO* designs and supplies **dedusting treatment plants** for steel meltshops with primary and secondary metallurgy.

The main activities that **PERT***ECO* is able to provide are:

- *Engineering (Process, Mechanical, Electrical and Automation)*
- *Project Management*
- *Supply of Equipments*
- *Supply of "Turn-key" Plants*
- *Services (supervision to erection, commissioning and start-up)*
- *Revamping of existing plants*

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Starting from the EAF technical data such as capacity, furnace dimensions, tap to tap time, consumptions of chemical energy, of fuel or natural gas and so on, **PERT***ECO* is able to provide the correct sizing evaluation of all the process figures and, of course, the basic or detail design for all the equipments and accessories.

The main dedusting plant areas for steel Meltshop are:

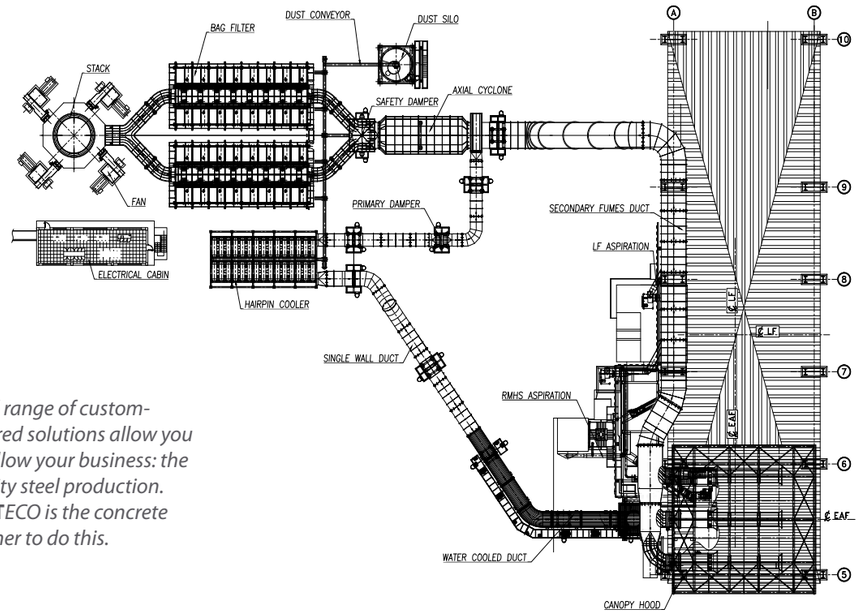
- **PRIMARY LINE:** *the off-gasses produced during the melting phase are evacuated by means of a water cooled duct through a settling chamber, where the heaviest particles are settled, up to a cooler unit. The main and most used cooler units are: Hairpin Cooler (HPC), Forced Draught Cooler (FDC) and Quenching Tower (QT). After the cooler units the fumes are collected to a mixing unit where the mix with the secondary fumes line is possible.*

- **SECONDARY LINE**: *the fumes produced during all the furnace phases, especially during the charging, are evacuated by means of a canopy hood installed on top of the furnace and through a series of ducts they are collected to a mixing point above mentioned.*

- **AUXILIARY LINE**: *the fumes produced in the Raw Material Handling System (RMHS), in the Ladle Furnace (LF) and in all the other suction points (e.g. maintenance areas) are collected in the secondary line by means of a dedicated booster fan.*

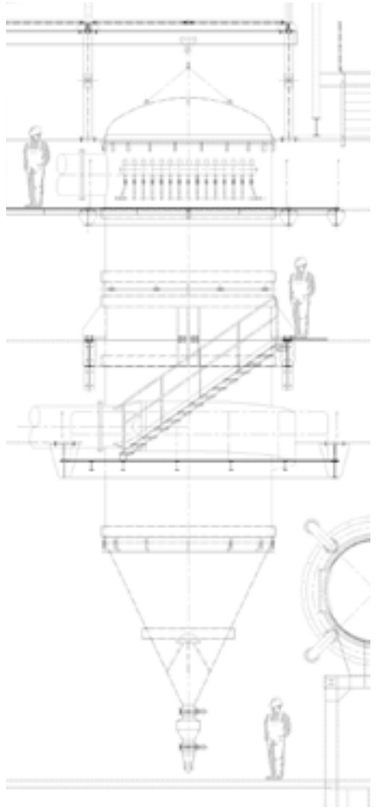
- **COMMON LINE**: *after the mixing point the cooled fumes are collected to the filter unit (pulse jet bag filter) through a spark arrestor (axial cyclone). After the filtration the fumes are released into the atmosphere. The aspiration of the fumes is possible by means of a series of axial fans located after the filters and before the chimney.*

- **DUST HANDLING SYSTEM**: *all the dust evacuated from the single machines (hairpin cooler, axial cyclone and filters) are transported by one set of chain conveyors and stored in a silo.*



A full range of custom-tailored solutions allow you to follow your business: the quality steel production.
PERT*ECO is the concrete partner to do this.*

VACUUM DEGASSING BAG FILTERS



Steelmaking is divided in primary metallurgy (melting furnace) and **secondary metallurgy** (tapping ladle). Secondary metallurgy is a necessary step to obtain the required characteristics of steel before casting.
In the **quality steel production** vacuum treatment is an indispensable step in the secondary metallurgy.
In the process of high quality steel production, the degassing process is essential to ensure a high standard of quality.
When the vacuum is generated by means of **dry mechanical pumps**, before them and after the stationary tank, a **Vacuum Bag Filter** is an essential equipment to assure a higher reliability of the vacuum pumps.
An advantage related to the dry vacuum pumps is that they do not require steam generation, therefore the water treatment plant size is reduced.
Starting from the technical and metallurgical data PERT*ECO* **is able to supply or design the VACUUM BAG FILTER.**