

PAUL WURTH SERVICING**BLAST FURNACE SALAMANDER TAPPING****SECURING SAFE WORKING CONDITIONS!**

In case of blast furnace relines or longer outages, it is necessary to evacuate the liquid residual material from the blast furnace immediately after the blow-down.

The removal of the hot metal accumulated in the blast furnace sump below the taphole, called salamander, requires a special know-how and has to meet strict safety conditions.

Paul Wurth offers its customers this unique service package, ensuring timely and safe salamander tapping, thanks to its expertise gained during the execution of numerous blast furnace projects worldwide.

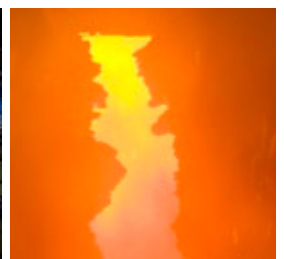
Our salamander tapping services

The salamander tapping activities provided by Paul Wurth comprise:

- Core drilling definition and execution
 - Critical analyses of thermocouple (TC) historical records
 - Calculation of erosion forecast by means of computer models
 - Definition of the taphole position and drilling angle
 - Actual core drilling
- Preparation of iron notch
- Final taphole opening by means of O₂ lancing
- Handling of the liquid residual material

Why to choose Paul Wurth for your salamander tapping?

- As a builder of complete blast furnace plants, we have an overall understanding of the BF process and operations.
- We thoroughly prepare the salamander tapping operation by doing critical analyses of TC historical records and applying mathematical models developed by Paul Wurth that allow to calculate the hearth lining erosion profile and to make erosion forecasts. So, the position and drilling angle of the additional taphole in the BF hearth are accurately defined.
- Thanks to accurate investigation on hearth conditions and “on-line” check of temperature profile during core drilling, we make minimal use





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of O₂ lancing so as to prevent possible damages to the hearth refractories.

- Our methodology allows to maximise the yield of the salamander tap, resulting in a low tonnage of solid residuals.
- We offer tailor-made salamander tapping solutions that perfectly meet the customer requests: ranging from runners designed to fit plant constraints and space availability up to

different liquid residual material handling solutions, such as torpedo ladles, railway cars or pit discharging.

- All our salamander tapping activities meet the strictest safety conditions.
- Our salamander tapping services allow to substantially reduce the outage times, thus resulting in significant cost savings.

Recent Reference

In the frame of the environmental upgrade of Ilva's steelworks in Taranto (Italy), Paul Wurth was contracted for the blow-down and salamander tapping of Blast Furnace N° 1 on a turnkey basis.

This job was successfully executed in less than one month, and on 8 December 2012 BF1 was shut-down after tapping 300 tonnes of residual material.

