Products and solutions: Quality Management Execution by PSI*metals*

# Everything under control? Heat analysis release

**Up to now, users of heat analysis evaluation systems in many steel mills have been faced with the typical problems associated with manual decision making. Existing systems do not feature the option of maintaining technological know-how so that reproducible, recordable results can be generated at any time. What's more, application-related decisions and reevaluations are carried out manually rather than automatically, which can result in more frequent mistakes and delays. The PSI*metals* Quality Management Execution (QME) function for the rule-based release of finished material is now being used in the liquid phase for heat analysis release.**

*Quality control begins at the production unit.* Source: Stahl-Zentrum, SMS

This enhanced functionality is used to standardise manual decision-making processes in view of the numerous different product requirements, and to implement an automatic heat analysis evaluation and release. In conjunction with the heat release system, PSI*metals* supports all business processes related to production and automatic quality management in the liquid phase.

## Automated and online usage decisions

Master data and aim analysis relating to the qualities to be produced are maintained centrally and version controlled by PSI*metals*. The test criteria and conditions for compliance with the aim analysis and the associated usage decissions and heat release are maintained in PSI*metals* as a set of rules. This set of rules is easy to create and configure, and can be maintained and expanded at any time by the quality engineer. In addition to the rules for evaluating the tundish analysis, there are also additional rules for the production-related online checking of interim analyses. Based on these rules and in the event of deviations, possible alternative grades and the appropriate heat production orders are automatically determined using the production program and are suggested to the user. For target-actual comparisons, the rule editor contains both the analyses and all of the heat data so that content-sensitive rules can also be created based on the current heat status.

## Target-actual comparison of finished-product analysis

Once the finished product analysis is available, PSI*metals* automatically performs the rule-based target-actual comparison and the application-related usage decision. If all limit values have been complied with, the heat is automatically released. If one or more limit values have been exceeded, an attempt is made to convert the heat to an alternative grade using the saved set of rules. If this is not possible, the heat and related material is blocked from moving on to the next stages of production. In this case, the quality assurance department must make a usage decision.

## Evaluation of interim analysis using the traffic light function

*Automatic evaluation and approval of molten masse0.s* Source: Stahl-Zentrum, SMS

The support for production-related quality assurance provided by PSI*metals* is consolidated through the online evaluation of interim analyses. These can be either facility-specific, complete, sub-target analyses or individual target-values for special elements. This is displayed to users in the steelmaking in the form of a traffic light. If the values of all relevant elements fall within the target range, the traffic light turns green. If the actual-value analysis does not comply with the target-value analysis and if the analytical specifications of the current quality are also no longer attainable in the subsequent treatment steps, the traffic light turns red. Based on the rules saved in the system relating to regrading or degrading, PSI*metals* then automatically generates suggestions for alternative grades that can still be achieved under the given conditions. In addition to the current availability of facilities, the existing pool of orders for the currently scheduled production program is also taken into consideration so that users have the best support for any conversion-related decisions.

**Improving process structures**

The Quality Management Execution system by PSI*metals* supports both optimised operations for steel production and also rule-based, automated usage and heat release decisions. These are available online, even during ongoing production, with checking of each individual analysis, from the primary facility and secondary metallurgy through to the casting of the heat. Using the automated system, heats are approved and released in a timely, reproducible manner using the configurable set of rules, thus reducing warehousing capacities and costs for the starting material as well as expenditure on staff. The PSI*metals* QME component can be integrated into existing manufacturing execution systems as an independent module. It is also an integral part of a complete PSI*metals* solution and is therefore another module added to PSI*metals* for the rule-based management of technological steelmaking know-how, treatment practices and ladle usage restrictions.

**► *Information***

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