Heraeus

Electro-Nite

SUSTAINABILITY CASE STUDY

The Importance of Measuring Hydrogen in Steel Production for Sustainable Practices

INTRODUCTION

Steel production is challenged by its impact on the environment, primarily in the form of Carbon Dioxide (CO2) emissions. Sustainability is becoming a pressing issue, and the various stakeholders in the steel value chain are looking at ways to keep emissions under control. This is where Hydrogen control plays a key role, and **Hydris®** ensures accurate measurements of hydrogen levels, enabling greater control of steel quality and consequently reducing overall CO2 emissions.

SUMMARY

High hydrogen levels often lead to several issues such as flakes, blowholes, and pinholes in the steel. These significantly influence the robustness and dependability of the steel. Hydrogen can be sourced from multiple areas such as atmospheric moisture, flux additions, linings, slag, and alloy additions, all of which can critically affect both the quality and consistency in your steel production.

By measuring hydrogen content, we can reduce these defects beforehand. Hydris® allows for hydrogen measurement before and after the degassing process. This measurement provides insights into the exact amount of time needed in the degassing station, optimizing the process, and ultimately, improving the production efficiency.

Hydris® can also measure hydrogen in the tundish to confirm that the desired hydrogen level has been achieved. This step helps in avoiding costly isothermal treatments, ensuring the desired quality, and avoiding sticker break out in the caster mould.

RESULTS

By integrating Hydris® into the steel production process, manufacturers gain control over the hydrogen levels. This control enables them to reduce potential isothermal treatments which are energy-intensive and therefore lead to a substantial amount of CO2 being released into the atmosphere.

Furthermore, optimizing the degassing process through accurate measurements means less time spent in the degassing station. This optimization translates to lower energy consumption, which in turn reduces the overall CO2 emissions.

CONCLUSION

In conclusion, managing hydrogen in steel production is not only beneficial from a product quality standpoint, but it is also invaluable for environmental sustainability. Heraeus' Hydris® assists in achieving these objectives, thereby making steel production processes more efficient, quality-oriented and contributing in reduction of CO2 emissions.