



„Safety first“ – followed by huge productivity increase later

Increase of productivity at Perwaja (Malaysia) by upgrading of TSM⁺ into fully functional LM.2 and effective process consulting

Initial installation of TSM⁺ (2008)

In order to mainly increase safety, in September 2008, Perwaja installed two special BSE Temperature and Sampling Manipulators (TSM⁺), which could later be upgraded to a Lance Manipulator type 2 (LM.2), at its two 75 tons DC EAFs (DC#4 and DC#5) in Kemaman / Malaysia.



The installation of TSM⁺ in 2008 ...



... left a highly satisfied installation team and effectuated a considerably increased safety for Perwaja operators.

Upgrade of first TSM⁺ into LM.2 (2012)

In 2012, being at the next phase to improve productivity respectively operation of the process, Perwaja decided to implement a new oxygen tool by upgrading the existing TSM⁺ at DC#5 into a complete LM.2 for injection of oxygen and carbon from the slag door.



Perwaja personnel view the new Lance Manipulator unit first with suspicion ...



... but the efficiency, reliability and flexibility of the LM.2 convinced the floor personnel and executives straightaway.

Results / Benefits

In July 2012, the equipment was successfully commissioned and installed at Kemaman site.

The smooth start-up was followed by a joined process optimisation by Perwaja team as well as one BSE metallurgist and one BSW EAF supervisor, who stayed at site for some extra days. Optimising the existing side wall oxygen tools and using the new LM.2, under consideration of the entire process, the results were quite stunning:

- ⊙ Power-on time: -7,4 min
- ⊙ Oxygen consumption: -4,5 Nm³/t
- ⊙ Electrical consumption: -81 kWh/t
- ⊙ DRI feeding rate: +9 t/h

Installation of DC-Online furnace monitoring (2012)

In addition to the upgrades of the TSM⁺, BSE also installed at DC#4 the DC-online furnace monitoring system replacing the old PlusArc system. Various functions, such as easy detection of deviations of the operating points from the set-points, enable Perwaja to further optimise the operating profile, active power input, power-on time, electrical consumption, panel lifetime and roof lifetime on a sustainable base.

Upgrade of second TSM⁺ into LM.2 (2013)

The successful installation of the LM.2 and process optimisation at DC#5 convinced Perwaja to upgrade also the TSM⁺ at DC#4 within shortest possible time. Hence, BSE was awarded with the upgrade project. The start-up is scheduled for beginning of 2013.

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