

Carbonisation Studies

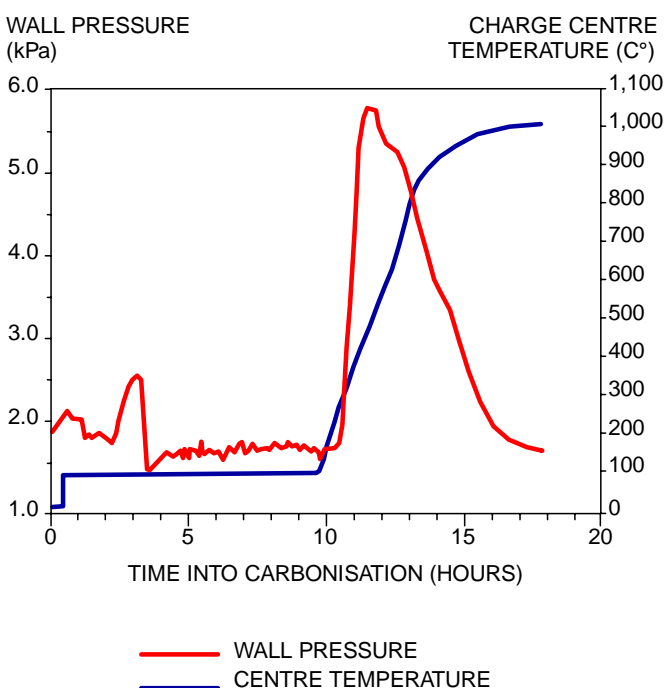


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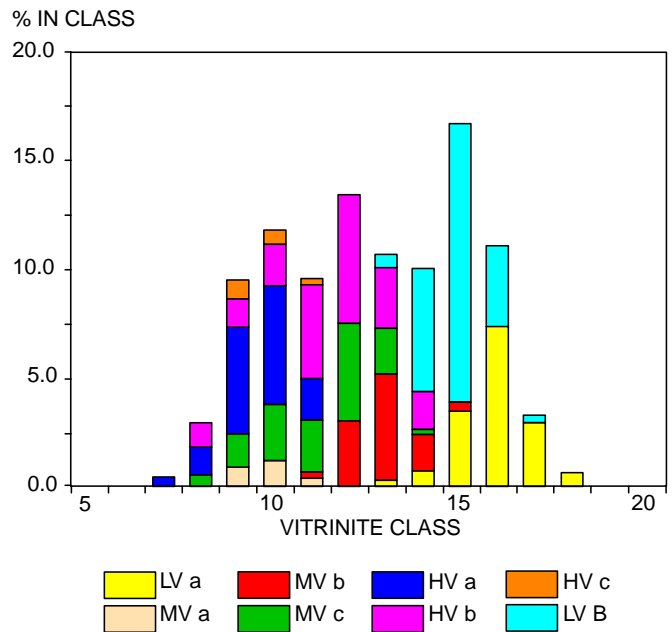
A coke oven battery is required consistently to produce coke with the properties required for stable blast furnace operation. As blast furnace productivity increases and coke rates decrease (especially with increasing levels of coal injection), the demands on the coke become even greater.

Corus uses coal from all over the world selected for their petrographic and coking properties to produce coke of the required size and strength, without adverse effect on the battery integrity. The measurement of coal reflectance is carried out using a Quantimet 570 image analysis system. The technique permits the rapid and accurate assessment of coal reflectance distribution and the maceral composition of both individual coals and coal blends. It is of particular use in optimising and controlling blend composition.

In addition to the standard pilot-scale tests required for coal blend evaluation, Teesside Technology Centre have developed a pilot-scale coke oven to monitor wall pressure during carbonisation. This enables dangerously swelling coals to be identified.



MOVEABLE WALL TEST OVEN RESULTS



VITRINITE REFLECTAVEL ANALYSES OF BLEND BY QUANTIMET

The oven is constructed in two halves. One half is fixed and the other half is free to move. The moveable wall is in contact with a load cell and the resultant force is monitored throughout the carbonisation cycle. A pressure relief system has been incorporated to prevent damage to the oven when highly swelling coals are tested.

Benefits from having Carburisation Studies include:-

- Attaining coal blends to achieve the best or target coke properties for the blast furnace
- Optimisation of the costs in order to achieve best coke (ie value in use blends of coals)
- Protection of coke oven fabric
- Improvement to the operating life of the coke oven (>35 years)
- Improvements to blast furnace operational stability
- Prolonged blast furnace life
- Cost saving which can amount to \$150,000 / day