



CanmetENERGY

Leadership in ecoInnovation

ENERGY RECOVERY COKEMAKING

Metallurgical coke is the major carbon source for iron ore reduction and energy supply for blast furnace ironmaking in the steel production process. In Canada, coke is produced by the carbonization of metallurgical coal blends in vertical slot ovens, which are designed for the recovery of valuable chemicals from the evolved gases. Canadian steelmakers are facing challenges imposed by the aging of their coke production facilities. Moreover, the inherent design and operation of the vertical slot oven for by-product recovery also results in severe fugitive air contaminant emissions and the generation of wastewater. Canadian steelmakers therefore need an alternative cokemaking technology.

The Energy Recovery Coke Oven (ERCO) meets the needs of Canadian steelmakers. It is designed to combust all of the gases evolved inside the oven during the coking process, supplying the required heat for carbonization. Also, the carbonization chamber is designed to operate at negative pressure, which significantly reduces fugitive gas emissions. ERCO also eliminates the recovery of off-gases, which significantly reduces wastewater generation associated with cokemaking.

PILOT SCALE ERCO

The Metallurgical Fuels Laboratory at CanmetENERGY-Ottawa constructed a pilot scale ERCO (1000 kg capacity). This new facility offers a unique opportunity to conduct quality R&D on energy recovery cokemaking technology. This facility enables investigations to be performed on both the fundamental nature of the technology and the commercial aspects of its operation. Conducting R&D investigations in a pilot ERCO that has complete control of the operational parameters will allow the execution of designed experiments. Features of the pilot scale ERCO include:



- Electrically-heated sole for precise control of heating from the bottom
- Controlled combustion of volatile matter in the crown-free space for precise control of heating from the top
- Strategically-positioned thermocouples to monitor temperature evolution in coal bed during coking
- Off-gas sampling for monitoring gas composition evolution and heat content during coking
- Box charge for precise control of coal bed bulk density

OTHER R&D FACILITIES

The Metallurgical Fuels Laboratory at CanmetENERGY-Ottawa has facilities for complete coal and coke handling, preparation, carbonization, and characterisation.

FOR MORE INFORMATION

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