

The present technology is generally directed to systems and methods for optimizing the burn profiles for coke ovens, such as horizontal hearth recovery ovens. In various embodiments the burn profile is at least partially optimized by controlling air distribution in the coke oven. In some embodiments, the air distribution is controlled according to temperature readings in the coke oven. In particular embodiments, the system monitors the crown temperature of the coke oven. After the crown reaches a particular temperature range the flow of volatile matter is transferred to the sole flue to increase sole flue temperatures throughout the coking cycle. Embodiments of the present technology include an air distribution system having a plurality of crown air inlets positioned above the oven floor.