Water Wall Wastage in a Commercial Circulating Fluidized Bed Combustor with Two Gas Exits

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The tube thickness profiles of water walls was measured in a large commercial circulating fluidized bed furnace (200 tonnes steam/h, 4.97 m x 9.90 m x 28.98 m high) with two gas exits by means of an ultrasonic thickness gauge in order to investigate tube wastage patterns. Wastage of all water walls, including wing walls, was significant in the transition region just above the refractory lining around the circumference of the combustor, especially at the center of the sidewalls and both sides of the front and rear walls. The lateral wear profile seemed to be influenced mainly by secondary flow, stronger toward the center than in the corners, and somewhat by the wing walls and gas exits. Wastage of some tubes was also found to be appreciable around the gas exit. The lateral profiles of tube thickness at the gas exit level and other findings indicate asymmetric flows between the two exits.