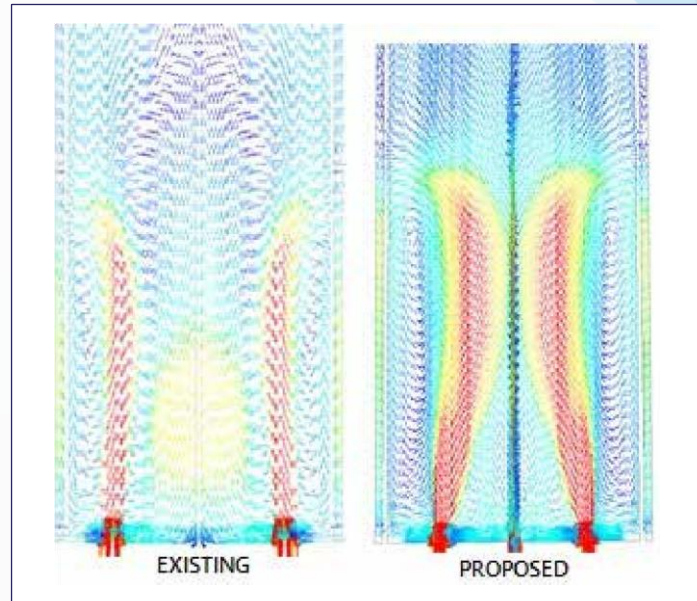


Improving Fired Heater Performance using CFD

Case Study 2 : Lowering Radiant Tube Metal Temperatures with Inclined Firing

A vertical cylindrical heater was having high tube metal temperatures in the lower section of the heater. CFD simulations were carried out to understand the flue gas flow pattern and temperature profile in the heater. As the burners were placed at a larger burner circle diameter, a central down ward flow was set which pushed the hot flue gases towards the radiant tubes, leading to high tube metal temperatures. Modifications were proposed to reduce the burner circle diameter and installing the burners at an angle towards the centre of heater. Proposed modification improved the flue gas circulation pattern and reduced the radiant tube metal temperatures by 100 oF.



Flames for existing configuration are much wider and very near to the radiant tubes. Flames for inclined firing configuration are concentrated in the center of the heater, and away from the radiant tubes.

