Capture Velocity of Booth

Issue: Smoke is escaping from the welding booths

The slot velocity in each booth ranges from 325FPM to 680FPM. Need to balance around 450 FPM slot velocity.

Slot area is .47 ft2 for all 5 slots total area is 2.35 ft2

CFM per booth 450FPM x 2.35 ft2 = 1057 CFM

The smoke is escaping from the opening between the top of the curtain and ceiling of the booth.

According to the Industrial Ventilation manual, the capture velocity for the open area is 100 to 200 FPM. The open area that is between the top of the curtain and the ceiling of the booth is 4.17 ft2 ((10” x 60”)/144). The CFM range is 417 to 834 CFM per booth.

By raising the curtain to 2” below the booth ceiling the new area would be .83 ft2. The CFM needed to meet the capture velocity would be 83 to 164 CFM.

This would capture the smoke and overcome the drafting effect from the return air blowing above the booths.