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## ANALYSIS OF NITROGEN CONTAMINATION PROCESS INTO ARC AFFECTED BY LATERAL GAS FLOW VELOCITY IN ATMOSPHERIC PRESSURE

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The atmospheric pressure arc deflects and becomes unstable in the case of strong cross wind. For example, the weld defects such as the lack of penetration and blow hole caused by the contamination of nitrogen in weld pool are caused by arc deflection. It is necessary to elucidate the contamination process of nitrogen under consideration of flow field derived from cross wind in order to prevent the weld defects. The observation of nitrogen contamination process caused by the cross wind has been researched when the gas between the cathode and anode is covered by the shielding gas. However, the nitrogen contamination process has not been elucidated when arc is not generated between the electrodes. The measurement of flow field and nitrogen concentration distribution in arc is difficult because the mass density difference and strong radiation derived from the temperature increment of arc occur. For this reason, it is required to elucidate the nitrogen contamination caused by the magnetic pinch force near cathode has been researched using the numerical analysis. However, it is suggested that the nitrogen is contaminated by the arc in case of the high lateral gas flow velocity because the flow velocity to the direction of arc center increases.

In this paper, the analysis of nitrogen contamination process into the arc affected by the lateral gas flow velocity in atmospheric pressure was elucidated. As a result, the nitrogen concentration near anode increases with increasing the lateral gas flow velocity. This is because the flow velocity to direction of arc center near cathode increased with the lateral gas. Therefore, the flow velocity near cathode plays an important role for the nitrogen contamination process into the arc.

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