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Surface treatment of aluminium alloy AA6060 using an industrially applicable pilot steam jet system with and without silicate chemistry has been investigated. Treatment using steam alone and steam with silicate, resulted in an oxide layer formation with thickness ∼425 nm and ∼160 nm, respectively. Moreover, the use of sodium silicate resulted in the formation of distinct microstructure and incorporation of silicate into the oxide film. These oxide films reduced the anodic activity 4 times, while the corrosion protection by silicate containing oxide was the function of its concentration. Further, in acid salt spray and filiform corrosion tests, oxide layer containing silicate exhibited two times higher corrosion resistance.

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