“Advanced Injector Technology for Increased Molton Sulphur Injection Efficiency”

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Abstract:

Efficient combustion of large volumes of molten sulfur is a current and growing requirement when producing sulfuric acid. The design of a new series of injector nozzles for the atomization and distribution of molten sulfur has been completed, characterized, and demonstrated to be effective in the sulfur combustion process. It is found that the enhanced design of the steam-jacket with the new injector technology will translate to longer spray nozzle life. Recent enhancements in computational hardware have allowed for more complex simulations at a reasonable cost/time. Design of spray injectors with tools including stress analysis coupled with fluid dynamics and heat transfer provide feedback that confirms field experiences. Heat transfer from the furnace to the molten sulfur through the injector can be modeled and shown to improve reliability.