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Enhancing Hydrogen Burner Applications through Additive Manufacturing and Design Automation

Additive manufacturing (AM) has a transformative potential when combined with advanced design strategies such as parametric and algorithmic design. This should be demonstrated on the application of hydrogen gas burners and be discussed on two key examples: the first involves the industrial application of a hydrogen burner designed for use in electric arc furnaces in the steel industry. The second example delves into foundational research on the development of an automated design process for crossflow gas burners. Here, the integration of AM with a systematic, algorithm-driven design approach showcases the potential for rapid iteration and optimization, paving the way for new hydrogen ready burner designs. The poster will also address the specific challenges faced in these applications and how AM-driven innovations are overcoming them.

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