

## ***A Cost-Effective Manufacturing and Repair Process for Structural, Low-Carbon Steel Components Using CSAM***

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In leading edge industries such as surface transportation and power generation, there are countless components made of low-carbon steel that eventually need repair or replacement, and a growing number of legacy components that have become extremely expensive and hard to procure due to their low production volume. For decades, existing repair and manufacturing technologies have been struggling with major challenges for this type of applications, but today, CSAM can be a game-changer.

In this presentation, we will discuss cold spray additive manufacturing (CSAM) of a low carbon steel alloy and will explore its potential to manufacture or repair structural components in a cost-efficient manner. Characterization of a new and low-cost water-atomized AISI 1025 steel powder will be presented. Steel build-ups microstructural and mechanical properties, as deposited and after heat treatment, will be shown and compared with reference bulk benchmarks. Finally, we will showcase manufacturing of a demonstrator component and present relevant cost estimates.

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