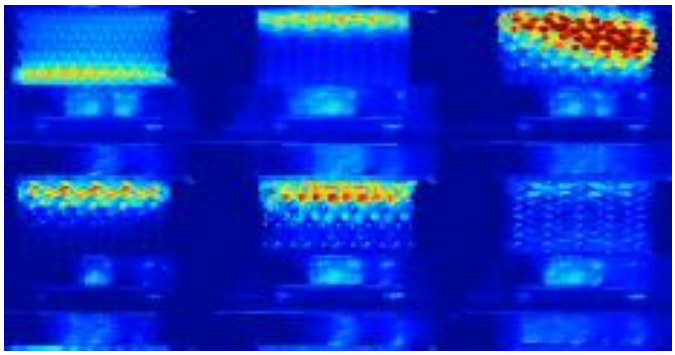
DOOLITTLEINSTITUTE
speed-innovation-solutions

Low Alloy High Performance Steel

High strength metals for industrial and defense applications

High Strength Low Alloy (HSLA) is a type of carbon steel with a chemical composition that provides increased toughness, corrosion & heat resistance, and easier weldability. These alloys are used acrossseveral industrial applications, including but notlimited to oil and gas pipelines, construction, military, and aerospace applications. However, HSLA is expensive to procure and complicated to manufacture.

Additive manufacturing (AM), or 3D printing, is a transformative approach to industrial production that enables the rapid creation of lighter and stronger materials. It can be used within the production of HSLA materials that were previously cost-prohibitive to produce.



The disclosed technology is a novel composition of HSLA steel (USAF-96), along with a proven AM manufacturing process that facilitates the production of a low cost and high performing HSLA. USAF-96 contains no tungsten (W) or cobalt (Co) and has low concentrations of nickel (Ni), expensive elements commonly procured from other countries. These properties allow USAF-96 to provide higher strength than comparable materials, along with increased toughness and reduced sensitivity to changes in temperature. Additionally, the novel AM process is highly efficient and cost-effective compared to other HSLA manufacturing methods.

This technology has been reduced to practice through prototyping and laboratory testing to confirm USAF-96 composition, physical & mechanical properties, and the production process. The Doolittle Institute is seeking partnerships, collaborations and/or licensure to commercialize this technology.

BENEFITS

Novel composition and manufacturing process for producing high strength materials with superior benefits to steel alloys.

Does not require expensive W or Co with limited Ni content

Efficient and inexpensive to manufacture

High strength and toughness

Improved resistance to corrosion and heat

OPPORTUNITIES

US patent 10,450,621 available for license

Collaboration with Air Force researchers

READY TO COLLABORATE?

Contact the Doolittle Institute:

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