

High Temperature Mechanical Properties of Wire Arc Additive Manufactured (WAAM) Alloys

Semi-annual Fall Meeting
October 2021

- Student: Juan Felipe Gonzalez Lopez (Mines)
- Faculty: Jonah Klemm-Toole (Mines)

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- Advisor(s): Jonah Klemm-Toole (Mines)

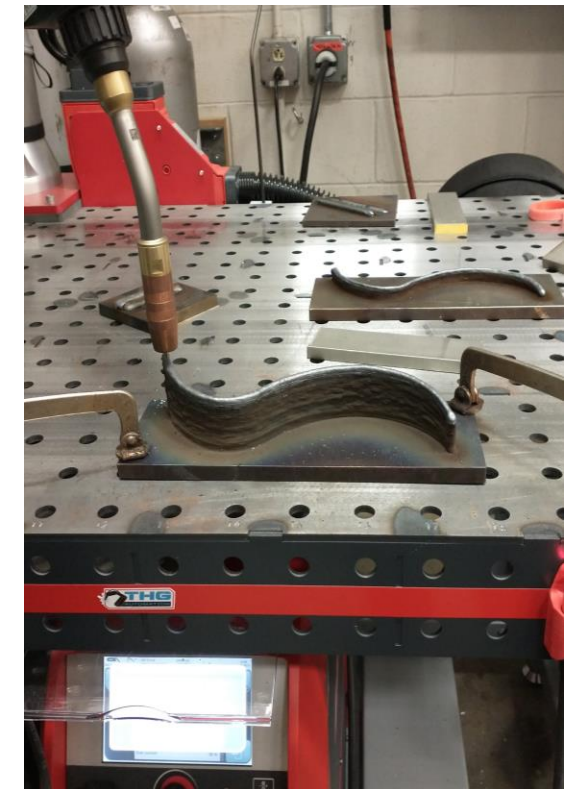
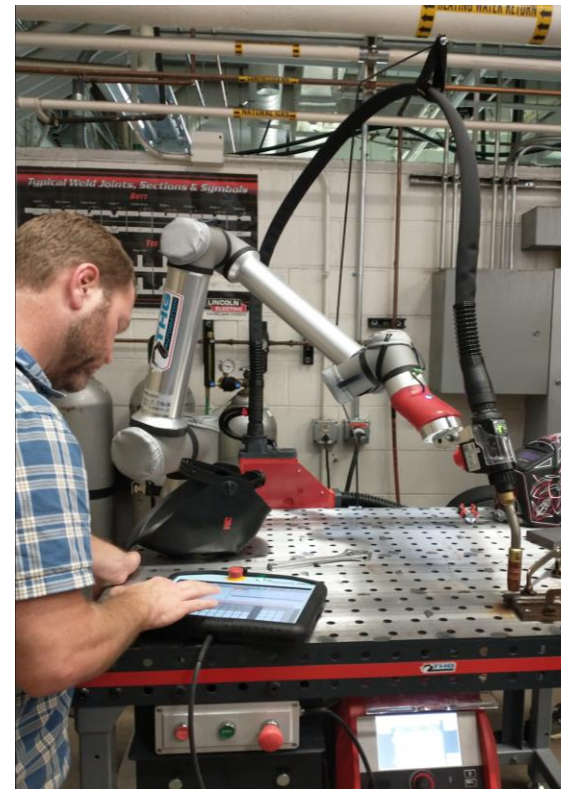
Project Duration

M.S: Aug 2021 to Aug 2023, PhD: 2023 - 2025

- Problem: Austenitic stainless steel and Ni-alloys are used for traditionally manufactured components in power generation and other high temperature structural applications. The replacement of these components often involves long lead times resulting in power plant outages that are expensive and deteriorate the robustness of the energy infrastructure.
- Objective: Understand the high temperature mechanical properties of high deposition rate WAAM stainless steels and Ni alloys compared to traditionally manufactured counter parts.
- Benefit: Reduced manufacturing time for replacement parts, more efficient component designs enabled by improved properties and increased flexibility of WAAM.

Recent Progress

- Training on a collaborative robot (cobot) controlled Fronius CMT GMAW power source for WAAM.



About Me

- Cali, Colombia
- B.S. in Materials Engineering from Universidad del Valle, April 2011
- Undergrad Research
 - Roof tiles made of Portland cement mortar added with rice husk ashes for affordable housing (GMC – Universidad del Valle)
- Industrial Background
 - Quality assurance and processes supervision
 - Polymers transformation
 - Steel construction
 - Precast concrete utility products
- Hobbies
 - Soccer
 - Martial arts
 - Cooking
 - RPG's
 - Video games
 - Traveling



Thank you!
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