

EVRAZ North America Qualifies High-Strength Line Pipe Steel for Hydrogen Transmission, Marking Industry Milestone

CHICAGO, Ill., April 11, 2023 – EVRAZ North America (ENA) today announced the successful development and qualification of a high-strength, high-frequency welded (HFW) line pipe for high-pressure, 100 percent hydrogen transmission. ENA is the first North American line pipe producer qualified for high-pressure, 100 percent hydrogen pipeline transportation.

In achieving this industry milestone, ENA conducted a full-scale mill trial and produced 20” OD x 0.500” X65 HFW pipe. All pipe samples were produced in Regina, Saskatchewan with steel from ENA Regina Steel, the Company’s Canadian EAF mill.

Body, weld, and heat-affected zone (HAZ) specimens from four different heats were tested successfully for ‘Fracture Toughness’ in accordance with ASME B31.12. After 1,000 hours under 100 percent gaseous hydrogen environment at 100 bar (~1500 psi), all specimens met the qualification requirement with no crack extension for very high applied load ($K_{I,app}$). In addition, the pipe samples passed all API 5L PSL2 mechanical property tests, as well as NACE standard HIC and SSC-4PB tests.

These results confirm previous testing outcomes and further demonstrate superior fracture toughness and resistivity to hydrogen embrittlement of line pipe product with K_{IH} values well exceeding ASME B31.12 criteria under Option B. In October 2022, ENA announced the successful completion of ‘Fracture Toughness’ testing on API 5L X65 Sour Service line pipe steel in accordance with ASME B31.12. Both body and weld specimens likewise demonstrated superior fracture toughness and resistance to hydrogen embrittlement at 100 bar (~1500 psi) and 200 bar (~3000 psi) in 100 percent gaseous hydrogen environment.

Hydrogen is a core component of ENA’s alternative energy strategy, which also includes carbon capture, utilization, and storage (CCUS), geothermal, and wind energy. Under the leadership of Dr. Muhammad Arafin, vice president, and Dr. Muhammad Rashid, senior program manager, the R&D team continues to focus on several projects including: new product development for the transmission and storage of hydrogen and CO₂, solutions for geothermal drilling, new standards development, and welding research. ENA is also working to establish a U.S. based *Center of Excellence* primarily intended for testing and research and development in line with hydrogen and CO₂ advancements.

Playing a vital role in supporting local economies and the steel industry supply chain in North America, ENA is committed to sustainable steelmaking and environmental stewardship, which is reflected in the Company’s significant investments in its people, products and technology on both sides of the border.

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About EVRAZ North America

EVRAZ North America is a leading North American producer of engineered steel products for rail, energy and industrial end markets. Headquartered in Chicago, IL, the company has six production sites located in the United States (Portland, Oregon; Pueblo, Colorado) and Canada (Regina, Saskatchewan; Calgary, Camrose and Red Deer, Alberta).

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