Advanced Alloy Signature Center: A National Resource for Alloy Development

Forging the connection between laboratory-scale innovation and large-scale production.

Manufacturing capabilities bridging the gap from lab to production scale.

NETL develops affordable and durable alloys by combining computations and artificial intelligence/machine learning with manufacturing at scale and assessment conditions.

Capabilities:

- Induction melting, vacuum induction melting, vacuum arc remelting, electroslag remelting furnaces (up to 500 pounds).
- Extrusion press, press forge, rolling mills, wire drawing.
- Electric arc furnaces (up to 1 ton) for steel manufacturing and pyrometallurgy.

Innovation and Impact:

- Computational design of homogenization heat-treatments for advanced superalloys.
- Developed system that improves ingot quality and reduces energy consumption during melting.
- NETL refractory (licensed to Harbison Walker) used in nearly every slagging gasifier worldwide.
- Improved GM's casting method for manufacturing complex aluminum engine components.
- Advanced a biodegradable medical alloy with BioGD and a world-leading radiopaque stent alloy with Boston Scientific.
- Developed alloys and armor for the U.S. Army that are in use today.

NETL PARTNERS

ATI

FORT WAYNE METALS

BioDG, inc.

SPECIAL METALS

OMIC R&D

NAVAL NUCLEAR LABORATORY

HAYNES International

Pacific Northwest NATIONAL LABORATORY

OAK RIDGE National Laboratory

INL Idaho National Laboratory

Lawrence Livermore National Laboratory

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