Breakthroughs in Additive Manufacturing Could Hasten Advanced Reactor Development

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BWXT Demonstrates Ability to Additively Manufacture High-Temperature Alloys and Refractory Metals

LYNCHBURG, Va.--(BUSINESS WIRE)-- The development of advanced nuclear reactors is continuing at a rapid pace, but issues still remain working with some specialty materials that are important to these reactors. Teamed with the Oak Ridge National Laboratory, engineers and designers at BWX Technologies, Inc. (BWXT) have developed new additive manufacturing technologies for the design and manufacture of reactor components made from high-temperature alloys and refractory metals.

Advanced reactors are designed to operate at very high temperatures, and the ability to additively manufacture (otherwise known as 3D printing) parts from these alloys and metals can further speed development.

Specifically, BWXT has demonstrated the ability to additively manufacture nickel-based super alloys and refractory-metal-based alloys for use in nuclear components. The company also accomplished component-level qualification, leading to a more efficient certification of nuclear materials configured in complex geometries. BWXT validated this technology during successful execution of an advanced nuclear technology development cost-share program awarded by the U.S. Department of Energy in 2018.

“We have a uniquely talented group of engineers and designers at BWXT,” said Ken Camplin, president of the Nuclear Services Group. “Their work will make it far easier for advanced reactor developers to move forward in dealing with a number of critical technical challenges inherent in many of these designs.”

Additive manufacturing technologies will be transformational for the nuclear industry because they enable the creation of shapes not possible with conventional manufacturing techniques. Additionally, verifying the ability to additively manufacture high-temperature super alloys and refractory metals enables designs that possess improved thermal energy management, increased safety margins and accident-tolerant characteristics.

With refractory metal alloy-based core components, it is conceivable that an advanced reactor can reach core exit temperatures of 2,700°F and overall plant efficiencies of approximately 50%.

Additionally, these material developments could have an immediate impact on the current commercial reactor fleet and the goal of achieving an accident tolerant fuel design.

BWXT plans to use its unique design expertise and advanced manufacturing capability to reduce the costs of advanced nuclear energy systems. Specifically, BWXT’s designs and manufacturing methods will enhance the power output and longevity of a reactor while maintaining affordable costs to manufacture.

BWXT expects to reduce manufacturing risk over time as outlined in its recent proposal to the Department of Energy’s Advanced Reactor Development Program (ARDP). According to the Department of Energy, ARDP “will speed the demonstration of advanced reactors through cost-shared partnerships with U.S. industry. By rapidly developing these advanced reactors that hold so much promise, we can expand access to clean energy and take advantage of market opportunities before key infrastructure and supply chain capabilities are lost.”

Forward Looking Statements

BWXT cautions that this release contains forward-looking statements, including statements relating to additive manufacturing for advanced nuclear reactors; projected demand and interest in additive manufacturing; and the timing and impact of the foregoing. These forward-looking statements involve a number of risks and uncertainties, including, among other things, necessary approvals and demand for advanced nuclear reactors. If one or more of these or other risks materialize, actual results may vary materially from those expressed. For a more complete discussion of these and other risk factors, please see BWXT’s annual report on Form 10-K for the year ended December 31, 2019 and subsequent quarterly reports on Form 10-Q filed with the Securities and Exchange Commission. BWXT cautions not to place undue reliance on these forward-looking statements, which speak only as of the date of this release, and undertakes no obligation to update or revise any forward-looking statement, except to the extent required by applicable law.

About BWXT

At BWX Technologies, Inc. (NYSE: BWXT), we are People Strong, Innovation Driven. Headquartered in Lynchburg, Va., BWXT provides safe and effective nuclear solutions for national security, clean energy, environmental remediation, nuclear medicine and space exploration. With approximately 6,700 employees, BWXT has 12 major operating sites in the U.S. and Canada. In addition, BWXT joint ventures provide management and operations at more than a dozen U.S. Department of Energy and NASA facilities. Follow us on Twitter at @BWXTech and learn more at www.bwxt.com .

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