Brush Wellman Inc. Announces New Developments for Oil & Gas and Offshore Markets

Cleveland, OH - November 30, 2004--Brush Wellman Inc.'s Alloy Products Group announces three new developments for the oil & gas and offshore markets: (1) Brush Wellman's ToughMet® 3 alloy coiled tubing has demonstrated superior fatigue resistance in testing by BPP in the United Kingdom and is a viable replacement to super duplex stainless steel for ultra deep water use; (2) Brush Wellman's copper beryllium alloy C17510 is the ideal material for deep water dynamic electric power cables, and (3) Brush Wellman has received approval from the American Society of Mechanical Engineers' (ASME) Board on Pressure Technology Code and Standards (BPTCS) for the use of copper beryllium alloy C17510 in Section VIII, Division 1, covering refineries and petrochemical plants.

Brush Wellman's ToughMet® 3 Alloy Recognized by United Kingdom's BPP as Top Performer for Umbilicals

Preliminary data from a joint industry project with BPP Technical Services Ltd. in the U.K. substantiated that umbilical tubes made with Brush Wellman's ToughMet® 3 is a feasible replacement to super duplex stainless steel. Among the ten materials evaluated, ToughMet 3 proved the best performer in low strain and high strain bending fatigue strength measured in tubes which were internally pressurized to 7500 psi.

"This tube product is comprised of the same alloy now seeing increased use for subsea valve systems. ToughMet alloy metallurgy is stable under strain and has very high resistance to sea water and sour well fluid corrosion," said Bill Nielsen, Brush Wellman's Marketing Director for Industrial Components and New Markets. "It operates with low friction against the parts it is mated with, which is important for reliable valve operation in deep waters."

Brush Wellman's Alloy C17510 Ideal Alloy for Deep Sea Wire; Heat Exchangers

Brush Wellman's alloy C17510 has proven the ideal material for wire used in deep water to bring high electrical power to the sea floor and for use in heat exchangers.

The advantages of C17510 include high strength, high conductivity, and resistance to corrosion and bio-fouling.

"Where copper cables won't survive, the high strength-high conductivity characteristics of this copper beryllium alloy could solve the problem of bringing high voltage AC electrical power to the sea floor," said Nielsen. "Further adding to the life expectancy is its superior resistance to seawater corrosion."

This material offers very high strength, in excess of 700 MPa, in combination with electrical conductivity more than 70 percent of pure copper. It is uniquely capable of solving the dynamic power cable for ultra deep water issue.

With thermal conductivity of more than 60 percent of copper combined with the highest allowable stresses among corrosion resistant alloys (CRAs), up to about 400° F, alloy C17510 is a viable material for use in offshore or subsea heat exchangers. Its resistance to bio-fouling further enhances its heat transfer advantages. In comparison to designs using other materials, C17510 demonstrated the ability for the design of significantly smaller heat exchangers when space is at a premium as well as significantly improved efficiency with a lower capital cost.

Brush Wellman Receives ASME Approval for Copper Beryllium Alloy C17510

Brush Wellman has received approval from the American Society of Mechanical Engineers' (ASME) Board on Pressure Technology Code and Standards (BPTCS) for the use of Copper Beryllium Alloy C17510 in Section VIII, Division 1.

The committee approved the use of alloy C17510 wrought sheet, plates, strip, rod, wrought fittings, seamless and welded pipe and tube, and forgings in the construction of welded boiler and pressure vessel components complying with the rules of Section VIII, Division 1, covering refineries and petrochemical plants.

C17510 is a high strength copper alloy with a minimum tensile strength of 100 ksi and yield strength of 80 ksi at room temperature. The allowable stresses for this alloy in ASME VIII-1 applications are significantly higher than all other commonly used alloys at temperature under 360°F. This potentially permits designs with thinner components that use less material. Its

thermal conductivity is also substantially higher than all other specified alloys for ASME VIII-1 applications, allowing for more compact designs or significantly higher heat transfer efficiency. C17510 is also resistant to corrosion and bio-fouling.

According to Nielsen, this approval will bring the use of copper beryllium alloys into areas it has not been used in the past, breaking ground in new markets for Brush Wellman. Nielsen added, "More importantly, this approval will provide potential customers with a different and better material for use in areas like steam condensers running on brackish or bio-active cooling waters where high strength, corrosion and bio-fouling resistant alloys would increase both the efficiency and the life of critical components."

Currently Brush Wellman is running beta testing with plans to release their finding in the next 7-10 months after C17510 has been placed in tough environments along side stainless steel to compare the corrosion of the two materials.

In addition to good corrosion resistance, C17510 is also easily formed, machined and welded.

About Brush Wellman Inc.

Brush Wellman Inc. is a wholly owned subsidiary of Brush Engineered Materials Inc. (NYSE: BW). Through its subsidiaries, Brush Engineered Materials supplies worldwide markets with beryllium products, alloy products, electronic products, precious metal products, and engineered material systems. Around the world, the company's engineered materials can be found in technically demanding end-use products with the telecommunications and computer, automotive electronics, industrial components, optical media, aerospace and defense, and appliance markets. Visit www.BrushWellman.com for additional information.

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