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CAVITATION EROSION BEHAVIOR OF THE CUALNI SHAPE MEMORY SAMPLES

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Cavitation erosion testing of Cu-12.8Al-4.1Ni (wt. %) shape memory alloy samples was investigated. Samples for analysis were produced by continuous casting procedure obtaining CuAlNi bar of 8 mm in diameter. Microstructural and cavitation erosion testing were carried out on samples in as-cast state and after solution annealing at 885 °C for 60 minutes following room temperature water quenching. Metallographic analysis using optical microscope (OM) and scanning electron microscope (SEM) was performed. Examination of microstructure reveals martensite in both investigated samples.

Cavitation erosion resistance testing was applied using standard ultrasonic vibratory cavitation set up with stationary specimen. Weight loss and image analysis were used for determination of the effects of cavitation erosion.

Based on obtained results, very low values of mass loss were measured for both samples, after an exposure time of 420 minutes. Further image analysis of the samples and pits characteristics at the end of experiment pointed out very low cavitation erosion.

Keywords: cavitation erosion testing, CuAlNi, shape memory alloy, image analysis, microstructure