

**ABSTRACT****TITLE: SEALING WELL CASINGS -**

An apparatus and method for sealing an inner wall of a portion of a casing positioned in a well employs an inflatable sleeve having an outer surface and a conformable composite sleeve of curable composition
5 extending around the outer surface of the inflatable sleeve. The inflatable sleeve is inflated to compress the composite sleeve against the surface of the inner casing wall. A local, activatable energy source, positioned downhole to deliver heat to the composite
10 sleeve, is activated to cure the composite sleeve to form a hardened sleeve. The hardened sleeve presses against the inner wall of the casing portion to create a fluid seal. The embodiments shown have a number of preferred features. The local energy source includes an
15 exothermic heat energy source for generating heat energy to cure the composite sleeve. The composite sleeve includes a mixture of resin and a curing agent, and the exothermic heat source includes thermite. The thermite includes a composition having a metal oxide and a
20 reductant. A starter mix is positioned adjacent the exothermic heat energy source, and the starter mix is ignited to start an exothermic reaction in the heat energy source. A conformable layer extends around the composite sleeve, with the layer serving to form a seal
25 between the composite sleeve and the inner wall of the casing portion.

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