



# U.S. Department of Energy Categorical Exclusion Determination Form



Program or Field Office: Office of Energy Efficiency and Renewable Energy:  
Phase III Xlerator Program

Funding Opportunity Number DE-FOA-0000397

Applicant Name: Altex Technologies Corp.

Location: Sunnyvale, CA

Project Title Low Cost Microchannel Heat Exchanger

Proposed Action or Project Description American Recovery and Reinvestment Act:

Industrial heat exchangers need to be more compact, have reduced temperature differences between hot and cold streams, minimal external energy losses and improved thermal recovery to make US industrial processes more efficient and competitive. Altex has discovered and is developing, under a DOE Phase II SBIR project, the innovative WASHEX heat exchanger technology that can meet these new requirements, as well as reduce costs by up to 75%. Currently, expensive micro-machining and chemical etch methods are used to form high performance heat exchanger channels that can yield the desired advanced performance. Altex has discovered an innovative manufacturing process that uses low cost materials and fabrication techniques that can form the high performance channels at much reduced costs. Altex proposes, under the Phase III project, that the WASHEX manufacturing process will be refined and WASHEX heat exchangers demonstrated on two types of industrial chillers. In the Phase II effort, project partners Altex, Glenro, and Vacuum Process Engineering manufactured WASHEX heat exchanger test articles, checked their integrity and ran laboratory performance tests that proved the expected high performance. Under the proposed Phase III effort, the WASHEX manufacturing process will be refined, multiple test articles will be produced, and the test articles will be tested in the laboratory to show both integrity and heat transfer performance. Importantly, the proven test articles will then be installed in two different industrial chillers, and the units tested to demonstrate how WASHEX can benefit commercial products, like chillers. By adapting WASHEX to only 25% of the chiller market, energy cost savings will be \$241 million/yr, NOx reductions will be 85 tons/yr, CO2 emissions reductions will be 1.8 million tons/yr, and capital cost savings will be \$240 million total by year 10. These are substantial reductions. Given the good performance and cost potential of WASHEX, Altex is planning to form a joint venture to commercialize WASHEX for industrial chillers, as well as other important heat exchanger markets.

Conditions: None

Categorical Exclusion(s) Applied: B3.6, B5.1

\*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 10 21

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

ORO NEPA Compliance Officer

**James L. Elmore**

Date Determined:

9/27/2010

Record ID: 8



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