

STATEMENT OF CONSIDERATIONS

REQUEST BY ALCATEL-LUCENT USA INC. (ALCATEL-LUCENT) FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE GRANT NO. DE-EE0002895; W(A) 2010-037

Alcatel-Lucent has requested a waiver of domestic and foreign patent rights for all subject inventions arising from its participation under the above referenced grant entitled "Advanced Refrigerant-Based Cooling Technologies for Information and Communications Infrastructure (ARCTIC)."

Alcatel-Lucent's partners are Modine Manufacturing Company and U.S. Hose Corporation. This waiver pertains only to the subject inventions arising from Alcatel-Lucent's participation. Modine Manufacturing Company intends to request a waiver for subject inventions arising from its participation in a separate petition. U.S. Hose Corporation has not expressed interest in pursuing a waiver at this time.

Alcatel-Lucent has recently developed modular cooling technology based on a central pump that supplies liquid refrigerant via hoses to microchannel heat exchangers that remove heat directly at the shelf level of equipment racks via refrigerant evaporation. Alcatel-Lucent believes its modular cooling technology is a more cost-effective and efficient solution of cooling data centers than the traditional computer room air conditioning cooling methods used today. As an example, according to Alcatel-Lucent, its technology can provide up to 90% less energy consumption than traditional methods

The objective of the agreement is to further develop Alcatel-Lucent's modular cooling technology. As set forth in Alcatel-Lucent's petition, the specific objectives include "i) advanced research innovations that dramatically enhance the ability to deal with ever-increasing device heat densities and footprint reduction by bringing the liquid cooling much closer to the actual heat sources; ii) manufacturing optimization of key components; and iii) ensuring rapid market acceptance by reducing cost, thoroughly understanding system-level performance, and developing viable commercialization strategies." The further developments of the modular cooling technology should deliver substantial benefits and capabilities in terms of reduced cooling costs, reduced footprint, and increased reliability.

The total anticipated cost of the agreement is \$2,269,096, with Petitioner and its partners providing 20 % cost share, totaling \$453,819. Petitioner is providing \$274,492 of that cost share, and its partners are providing the remaining \$179,327. This waiver is contingent upon the Petitioner maintaining, in aggregate, the above cost sharing percentage over the course of the agreement. In addition to the above cost share, Alcatel-Lucent has invested approximately \$3,000,000 to date in this cooling technology. The period of performance is January 31, 2010 through March 31, 2012.

Alcatel-Lucent has successfully built and installed a prototype modular cooling technology system that is based on the liquid refrigerant discussed above in one of its test data center. This system has proven to use 93% less energy than a traditional computer-room air-

conditioner unit of the same capacity and allows for a threefold increase equipment rack density. Alcatel-Lucent has disclosed and explained this technology through an industry conference, a webinar, and several whitepapers. Alcatel-Lucent has numerous patents and patent applications related to electronic cooling solutions including U.S. Patent Application Publication No. 2009/0086434 entitled "Recirculating Gas Rack Cooling Architecture," U.S. Patent No. 7,204,298 entitled "Techniques for Microchannel Cooling," and four unpublished patent applications.

Alcatel-Lucent has agreed that this waiver shall be subject to the march-in and preference for U.S. industry provisions, as well as the U.S. Government license, comparable to those set out in 35 U.S.C. 202-204.

Alcatel-Lucent has not agreed to the standard U.S. competitiveness provision that requires products embodying any waived invention or produced through the use of any waived invention be substantially manufactured in the United States. According to Alcatel-Lucent, it cannot agree to such a provision due to the geographical distribution of its established supply chain that includes the manufacture and assembly of certain electronic hardware outside of the United States. However, Alcatel-Lucent notes that the research under the award will be conducted in United States and that this technology will allow for the retrofitting and establishment of new data centers in the United States and that these activities will support jobs in the United States.

Specifically, in lieu of the standard U.S. competitiveness provision, Alcatel-Lucent agrees to the following legal commitments in exchange for this waiver:

1. Subject to the successful completion of the work under this award, Alcatel-Lucent will enable a new commercial service of implementing, retrofitting, or otherwise incorporating the technology developed under this award into Information Communication Technology (ICT) facilities, such as data centers and central offices, in the United States. Alcatel-Lucent will enable the foregoing service by either offering the service directly to the owners and users of ICT facilities in the United States or by licensing the technology developed under this award, under commercially reasonable terms, to others who apply for licenses and are willing to offer the service.
2. All work on this award will be performed within the United States, including R&D, manufacturing by sub-awardees, sales and marketing activities, and system-level testing in end-user facilities. For the funded project, Alcatel-Lucent will create two postdoctoral research fellowships for the two-year duration of the project. The sub-awardees will retain a manufacturing engineer, create an engineering technician position for the two-year duration of the Award, hire a full-time Product Development Engineer, and create a temporary sample technician position. In addition, installers and contractors will be hired to install the prototype systems.
3. Alcatel-Lucent has an active program for licensing the patents in its portfolio to others for commercialization purposes in exchange for various forms of consideration (including, but not limited to, bilateral patent license exchanges with others) and will

seek to license the subject inventions related to this grant in the normal course of those licensing activities on a non-exclusive basis. In accordance with its licensing program, Alcatel-Lucent, in its sole discretion, may license any and all patents for subject inventions under this grant at any time and will undertake to license such inventions on reasonable, customary, and non-discriminatory commercial terms.

Referring to item 10 of the waiver petition, granting this waiver is not anticipated to have any adverse impact on competition. Alcatel-Lucent does not have a dominant position in the field of cooling solutions for electronic installations and has at least five competitors in the field of cooling solutions for electronic installations. Based on publicly available information, it is estimated that these five competitors have a combined annual revenue of nine billion dollars. Alcatel-Lucent hopes to use any intellectual property developed under this award as a way to establish an early market position in next-generation cooling solutions and to protect its investment. However, Alcatel-Lucent does not believe that its intellectual property or use thereof would preclude its competitors from developing and marketing their own advanced cooling solutions. Moreover, based on the competitors estimated revenue, it would appear that they have the financial resources to do so.

Considering the foregoing, it is believed that granting this waiver will provide Alcatel-Lucent with the necessary incentive to invest its resources in commercializing the results of the agreement in a manner that will make the above technology available to the public in the shortest time. Therefore, upon evaluation of the waiver petition and in view of the objectives and considerations set forth in 10 CFR 784, all of which have been considered, it is recommended that the requested waiver be granted.

/Glen R. Drysdale/
Glen R. Drysdale
Patent Attorney
Golden Field Office

Date: 6/30/10

Based upon the foregoing Statement of Considerations and representations in the attached waiver petition, it is determined that the interests of the United States and the general public will best be served by a waiver of patent rights of the scope determined above, and therefore the waiver is granted. This waiver shall not apply to any modification or extension of the agreement, where through such modification or extension, the purpose, scope, or cost of the agreement has been substantially altered.

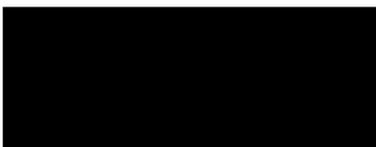
CONCURRENCE:



~~Douglas Kaempf~~ Isaac Chan
Program Manager
Industrial Technologies Partnerships

Date: 11/18/10

APPROVAL:



John J. Lucas
Acting Assistant General Counsel for
Technology Transfer and Intellectual
Property

Date: 11/19/2010