

## STATEMENT OF CONSIDERATIONS

REQUEST BY SENER, INC. ("SENER") FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE AWARD NO. DE-EE0003592; W(A) 2011-009

The Petitioner, SENER, has requested a waiver of domestic and foreign patent rights of the United States of America in all subject inventions arising from its participation under the above referenced cooperative agreement entitled "High Efficiency Thermal Storage System for Solar Plants (HELSOLAR)."

SENER's partners are Graftech International Holdings Inc. ("Graftech") and the University of California at Berkley ("Berkley"). This waiver pertains only to the subject inventions arising from SENER's participation. Graftech has not yet submitted a patent waiver request. Berkley is a non-profit institution as defined by the Bayle-Dole Act and, thus, is eligible to retain title to its subject invention without the need of a patent waiver.

The project funded by the cooperative agreement is focused on the development of a highly efficient, low maintenance and economical Thermal Storage System (TES) based on graphite for Concentrated Solar Power (CSP). This system shall have, as compared with already existing solutions, extra capacity for higher temperatures or bigger thermal differences. Main objective is to evaluate a TES able to store energy being able to reach high temperatures (requirement: 600 °C , goal: 800°C) and robust enough to withstand the thermal cycles foreseen in a span live of 30 years with no parasitic energy consumption. The complete project scope covers from the basic design of the system up to the construction and testing of a prototype. The project is split into three phases with the following scope: (I) basic design: System design of the proposed concept identifying critical elements and main risk factors. Economic analysis and estimated contribution to LEC reduction; (II) detailed design and more accurate economic evaluation and preparatory work for prototype construction and testing; and (III) TES demonstrator manufacturing and tests. Test results evaluation and final conclusions with respect to contribution to CSP Plants cost reduction.

The total anticipated cost of the agreement for the three phases is \$4,691,941. The total dollar amount from the Department of Energy is \$3,090,172 for the three phases of the agreement. The total cost share amount from SENER and its partners is \$1,601,769 for the three phases. Specifically, SENER and its partners is committed to a 20% cost share for phases I and II and a 50% cost share for phase III. SENER's participation relative to its partners constitutes about 50% of the total agreement in terms of cost and cost share commitment. This waiver is contingent upon SENER maintaining 20% cost share for phases I and II and 50% cost share for phase III.

As set forth in its petition (enclosed hereto), SENER has designed several CSP Power Plants that include thermal storage systems. Specifically, "17 plants have been operational for several years or in earlier phases like commissioning, construction, or design. On top of that, SENER is pursuing the development of new plants in the USA, Abu-Dhabi, South Africa or India." Examples of several plants designed by SENER with thermal storage systems are listed on pages 24-35 of the petition's attachment entitled SENER Experience in Concentrated Solar Power. Over the past ten years, SENER has invested tens of millions of dollars to develop the

technology that forms the basis of the work under this cooperative agreement.

SENER 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. Further, SENER has agreed to the U.S. competitiveness provisions as attached to this Statement. In brief, SENER has agreed that products embodying any waived invention or made through the use of any waived invention shall be substantially manufactured in the United States, and that SENER will not license, assign, or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements.

Referring to item 10 of the waiver petition, SENER does not believe that the granting of this waiver will place SENER in a dominant position because other companies and research institutions are pursuing the development of other types of solid thermal storage systems for CSP applications that should be unaffected by the granting of this waiver.

Considering the foregoing, it is believed that granting this waiver will provide SENER 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 approved.

  
Glen R. Drysdale  
Patent Attorney  
Golden Field Office

Date: 3/17/11

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 approved. This waiver shall not apply to any modification or extension of the cooperative agreement, where through such modification or extension, the purpose, scope, or cost of the cooperative agreement has been substantially altered.

CONCURRENCE:

APPROVAL:

[Redacted signature area]

Ramamoorthy Ramesh  
Program Manager  
Solar Energy Technology

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

Date: 2/15/12

Date: 2/22/2017

## **U.S. COMPETITIVENESS**

The Contractor agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States, unless the Contractor can show to the satisfaction of DOE that it is not commercially feasible to do so. In the event DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in some appropriate manner, *e.g.*, recoupment of the Government's investment, etc. The Contractor further agrees to make the above condition binding on any assignee or licensee or any entity otherwise acquiring rights to any waived invention, including subsequent assignees or licensees. Should the Contractor or other such entity receiving rights in any waived invention undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license, or other transfer of rights in any waived invention is suspended until approved in writing by DOE.