Background and Objectives

The DESERTEC concept is concerned with the sustainable supply of cost-effective electricity from renewable energy sources for the EU-MENA region. Accordingly, Concentrated Solar Power (CSP) plants in the North African desert should supply a significant share of electricity. However, realization of this concept requires adequate technical, institutional and socio-economic frameworks in the respective countries. The enerMENA project addresses these aspects and takes essential steps to prepare the ground towards a sustainable realization of CSP power plants. The project is funded by the German Federal Foreign Office. It was initiated and is run by the Institute of Solar Research at the German Aerospace Center (DLR), a pioneer in this field who has shaped the DESERTEC concept.

enerMENA strengthens the EU MENA partnership in the technological field and brings all counterparts into an advanced stage of cooperation. A network of CSP professionals and specialists from both sides is being established and supported in the framework of the project to coordinate future activities. The project addresses institutions and key persons from R&D, educational institutions and public and private sectors, who are active in the CSP technology development in the MENA region.

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Solar Research Department at DLR

The overall aim of the Institute of Solar Research at the DLR is to develop concentrating solar technology for the CO₂-free supply of heat, power and fuel. The institute has a leading role in this area and cooperates closely with industrial partners to develop the CSP technology and markets. Moreover, the institute is an active partner in expertise networks and several research programs. Its expertise covers a wide spectrum of solar research from basic research, experimental and numerical investigations to demonstration under real plant operating conditions, including economic analyses.

The institute has a permanent research staff at the Plataforma Solar de Almería in Spain, where it cooperates in a number of pilot experimental facilities. Furthermore, it operates the 1.5 MW tower facility in Juelich, a solar furnace (25 kW), a high performance sun simulator (20 kW), the QUARZ Test and Qualification Center for Concentrating Solar Technologies and several other solar testing facilities and laboratories in Cologne and Stuttgart.

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MODULE I
Capacity Building and Optimization

This module focuses on supporting MENA partners to test and therefore increase efficiency of their CSP plants during their construction and operation phases. To achieve this objective, cutting-edge measurement technologies are applied. Partners in the MENA countries are equipped with mobile laboratories to conduct such activities in cooperation with the DLR. Another target is the capacity building of the local skilled workforce in order to meet the needs of the growing industry. In this regard, professional workshops and training courses are an important part of this module.

Main partners
- CSP Power plants owner and operators
- R&D Institutions
- Technical instructors
- Engineering, Procurement & Construction (EPC) contractors CSP business

MODULE II
Transfer of expert knowledge

This module aims at the preparation of advanced CSP teaching materials for universities in the EU-MENA region. It involves also supporting the partner institutions with the implementation process of these materials in the respective programs. Consequently, a knowledge multiplication process is initiated and leads to the dissemination of advanced knowledge on CSP technology. The CSP teaching materials are the first-of-its-kind and covers the entire spectrum of CSP from technology to socio-economic aspects. Moreover, training materials for vocational training schools are offered in this module to qualify technicians required to maintain and operate the new power plants.

Main partners
- MENA Universities
- R&D centers
- Vocational training schools

MODULE III
Dissemination and Support

Several high-precision meteorological stations are being installed in partner countries to set up the enerMENA Meteo-network for the region. The data acquired from this network could be jointly processed and analysed to be used for R&D and planning activities. Moreover, in order to strengthen the scientific exchange between the DLR and its MENA partners, a project office is set up to act as interface between the DLR scientists and project developers in the MENA region. It will also enhance the dissemination of CSP expert information in the partner countries. Within the framework of this module, educational material has been prepared in the area of project management and yield analysis of solar thermal power plants. These materials will be used in training courses for managers, decision makers and engineers of the partner countries. Moreover, this module adds to foster the participation of the local industry and private sector to support the CSP market development.

Main partners
- Decision makers
- Project developers
- Utilities
- R&D institutions
- Universities