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Fraunhofer Researchers in Sunny Chile

Northern Chile is one of the sunniest regions on Earth and holds great potential for developing a sustainable energy supply based on solar energy. Four years ago, Fraunhofer ISE initiated the Fraunhofer Centro de Tecnologías para Energía Solar CSET in Santiago de Chile together with the Fraunhofer Chile Research Foundation. The Center CSET cooperates closely with local universities in Chile. Recently, Prof. Hans-Martin Henning, Institute Director of Fraunhofer ISE, met with representatives of the Chilean Ministry of Energy, the Office for Economic Development and the Chilean Chamber of Commerce in order to strengthen the cooperation and identify strategies for the future.

Chile not only is an excellent location to develop a sustainable energy future but also has the potential to become a successful exporter of renewable energy carriers," remarks Prof. Hans-Martin Henning, institute director of Fraunhofer ISE on the occasion of his visit to Chile in mid-March. "In cooperation with Fraunhofer ISE in Freiburg, the Chilean solar research center Fraunhofer CSET makes a valuable contribution in the development of solar technologies, from the initial phases up to market readiness." Solar thermal, photovoltaic, battery and hydrogen technologies were the key technologies focused on in the joint talks on future strategic research themes.

Particularly Challenging Climate Conditions

As the country with the world's highest direct solar irradiation, Chile holds great potential. This, however, goes hand in hand with harsh climate conditions that both materials and components must withstand. Fraunhofer ISE has comprehensive expertise on both materials and components. For nearly forty years, the Freiburg researchers have been working on solar thermal processes that address a wide variety of applications and temperature ranges. They also test materials and components under extreme weather conditions, which assist them in developing, for example, procedures for long-term stability. "We see excellent conditions for cooperation with the aim of fostering the necessary R&D activities here in Chile," says a pleased Prof. Frank Dinter, director of Fraunhofer CSET in Santiago de Chile. Dinter himself has many years of experience in the field of solar thermal research and solar electricity generation.

The potential areas of application for solar thermal in Chile cover all temperature levels from residential hot water heating, through industrial processes up to large power plants. In particular, the topic of the integration of storage for the energy supply is of central importance. Also, quality control, optimizing existing systems and other services are key for ensuring reliable operation with maximum yield and long system service life.

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Cross-continent Research Cooperation for the Mining Sector

Australia is also present in Chile, working together with Chile to develop a sustainable mining sector. By invitation of the Australian ambassador, the Chilean, German and Australian experts got together to discuss the possibilities for an international cooperation to promote more environmentally friendly technologies and especially to reduce the carbon emissions due to energy consumption in mining. The Australian-German- Chilean cooperation also met to discuss plans for a new Chilean institute for clean technologies.

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The national research agency of Australia CSIRO and the Fraunhofer-Gesellschaft are active in Chile, both with research centers in the field of sustainable technologies. Together with Chilean partners, the two organizations have agreed to cooperate closely in the establishment of a new Chilean institute for clean technologies.

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Field of heliostats at the 100 MW central tower solar concentrating power plant of Cerro Dominador in Northern Chile, presently under construction. In combination with a large molten salt storage, the plant can provide constant 24-hour electricity feed-in. This and other technologies offer enormous potential for the development of a renewable-based energy supply system in Chile.

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