

# Industrial Applications of Solar Radiation

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The lecture introduces the principles of solar thermal power production and solar process heat generation and outlines recent developments of its industrial implementation. The appropriate technologies address both increasing demands in power and industrial process heat on the one hand and huge markets in the said branches on the other hand. Industrial implementation achieved a multi-MW scale.

In addition to these thermal applications, in the long term future solar radiation may be used for the operation of chemical processes or for the production of commodities or fine chemicals either directly in photochemical conversions or indirectly in thermochemical or electrochemical processes. In the last two decades feasibility of several solar chemical processes has been proven up to an engineering scale of several hundred kW. Some characteristic examples will be discussed in order to derive key challenges for r+d or eventual barriers that would counteract an industrial acceptance.

Caption of attached photograph:

DLR High Flux Solar Furnace. The solar furnace is used for tests and qualification of components and processes that need highly concentrated solar radiation at irradiances up to 5 MW/m<sup>2</sup>.