# Minisymposium scope organized by Plataforma Solar de Almería (CIEMAT) in *Modelling and Simulation in Solar Thermal Power Plants* in the 9th Vienna International Conference on Mathematical Modelling (MATHMOD 2018) to be held in February 2018.

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In recent years, an increasing quantity of solar thermal plants has been built along the whole world for the purpose of thermal or electrical energy supply from solar radiation. The plants operate in versatile temperature ranges. Concentrating solar thermal (CST) plants, which are designed for high temperatures, are complex systems formed by different components, frequently presenting important uncertainties and nonlinear dynamic behaviour. Most of the current CST plants are using Parabolic Trough Collector (PTC) and Central Receiver (CR) technology based components and aimed at electricity generation. The CST technologies gave rise to an incipient industry, mainly aimed at electricity generation that is progressively including current research results although the development of new design, operation and control techniques is a growing field of research.

Solar thermal energy solutions with flat plate collectors are focused towards large scale applications which range from district heating, mining, brewing, agricultural industry to energy renovations of large building complexes. District heating is a very suitable application for solar thermal heating, especially in networks with low temperatures. Several industries use process heat and can benefit from the use of solar thermal process heating. Among them are greenhouses, mining companies, dairies, brewing companies and other food industries to name only a few customer segments.

Due to the great complexity of such energy systems including the intermittent and uncontrollable nature of the energy source (solar radiation), intermediate storage systems, other controllable renewable generators and variable load demand; new approaches have to be done in order to optimally operate and control systems of this kind.

Besides operation and control objectives, modelling and simulation could be more deeply applied in the whole life cycle of any solar thermal energy plant, like in component development, logistics in the plant construction, dispatchability, hybrid plant configurations design, for citing just some of them.