

NEW DESIGN OF LINEAR FOCUS SOLAR COLLECTOR FOR MODERATE TEMPERATURE THERMOSOLAR ENERGY RECEIVERS

Description:

In the context of the solar thermal industry, parabolic trough technology (PTCs) is the one that arouses the most commercial interest due to its technological maturity and the reduced risk to be assumed by investors in its implementation. Currently, cavity receivers are an excellent alternative for solar thermal systems for process heat, but the conventional design of a receiver, with a vacuum ring, is designed to operate with temperatures greater than 300°C in the heat transfer fluid. This entails an increase in the complexity of the design, which entails a considerable increase in production costs, as well as a penalty in their durability due to some inherent aspects of their design. This means that they are still expensive and not very robust, since their optical and thermal properties tend to degrade over time. Therefore, more robust receivers are necessary, that without requiring the most vulnerable and expensive elements existing in current systems, acceptable levels of thermal and optical losses can be guaranteed. The present invention describes a new collector with a linear focus analogous to the PTCs currently existing in electricity generation plants. By means of a new geometry of the primary reflector and a new cavity receiver, an alternative is provided for systems that operate in a moderate temperature range (<300°C), as is the case of solar thermal systems that provide process heat.

Keywords:

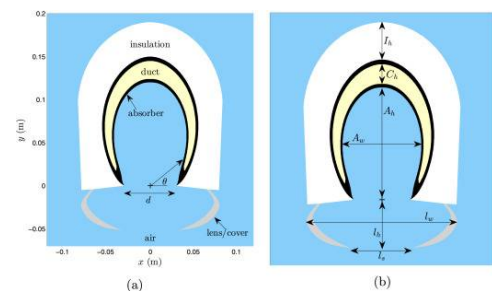
[Solar Energy](#), [Solar Receiver](#), [Parabolic Trough Collectors](#), [Solar Thermal Systems](#)

Sectors:

[Engineering](#), [Environment and Energy](#)

Areas:

[Industrial](#), [Energies](#), [Energy methods and procedures](#), [Technological Improvements](#)



Advantages:

The receiver concept described here proposes a suitable design for systems with moderate operating temperatures thanks to the optical system that fulfills a double function: reducing thermal losses and increasing the concentration factor. It is a simple design, allowing the existence of flexible systems without the need for complex maintenance tasks, and it is of special interest in process heat systems where the operating temperature of the fluid is below 300°C.

Uses and Applications:

Belonging to the Solar Energy sector. For application in parabolic trough collectors (PTCs), specifically to collectors with a linear focus to generate process heat in any type of industry.

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