



Linear Mirror II

solar energy less expensive than fossil energy

The hotel “Al Cavaliere” at Pordenone (IT) uses a Linear Mirror II for heating the building and sanitary water since Feb. 2014.



The Linear Mirror II provides solar thermal energy at high temperatures also in winter, and it is cheaper than gas or oil. The Linear Mirror II reaches 9 kW of thermal power and can substitute about 800 liters of oil per year. It can heat water up to 100 °C also in winter and in northern climates. Alternatively it can heat oil up to at least 180 °C. It is therefore well suited for many industrial applications. The Linear Mirror II is a ready industrial product with the “Solar Keymark” certificate.

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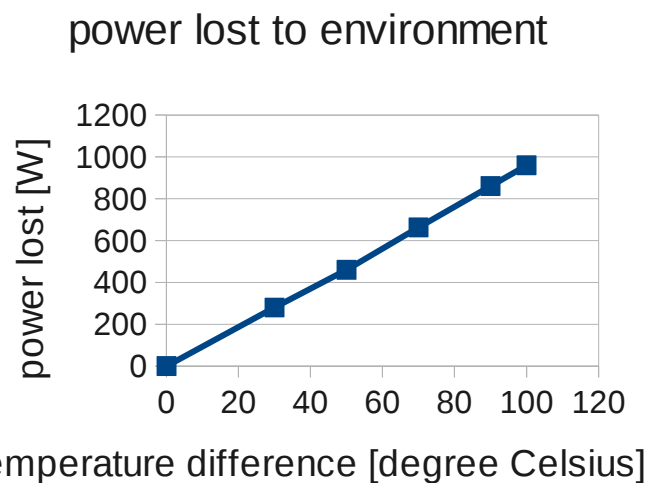
Simple

The Linear Mirror II consists of 8 aluminum mirrors, which are connected to each other – this is very simple. As a consequence the Linear Mirror II does not have the problems of the sophisticated traditional solar concentrating devices: for instance, the heat exchanger of the Linear Mirror II always remains in a fixed position (unlike the heat exchanger of a parabolic dish), and it has a simple rectangular shape (unlike the long tubes used in parabolic troughs).

Referring to conventional systems, the Italian agency for renewable energies (ENEA) correctly states >> the solar concentrating devices present a complexity, which prevents their use in common applications <<. The operation of the Linear Mirror II instead is totally simple due to its simplicity of construction and due to its intelligent autonomous control system. The device can also be connected to the internet, in which case its performance can be controlled continuously.

The Linear Mirror II is based on the reliable technology of the older Linear Mirror I device.

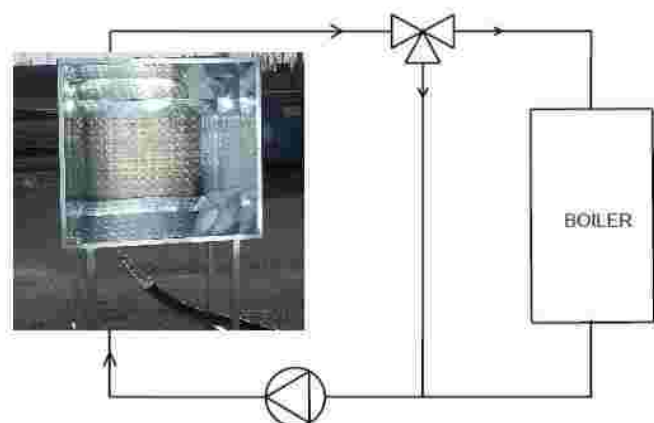
The energy lost to the environment is much lower than in conventional devices:



Easy Integration

Since the Linear Mirror II acts as an autonomous stand alone unit, its integration in the heating system is simple, too. In the drawing we show, how for instance the mirror can be connected to the boiler of any a heating system.

For the integration in a complex industrial application Isomorph can provide the contact with qualified engineers for all kinds of applications.



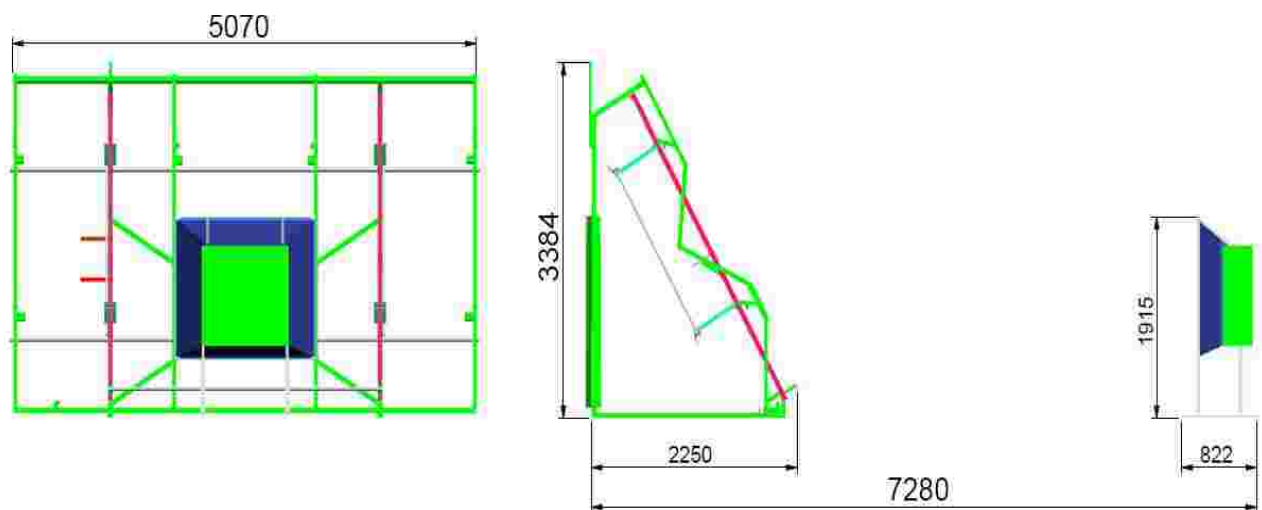
Return of Investment

Thanks to its simplicity, the Linear Mirror II pays off faster than other solar devices. Since it is certified with the Solar Keymark, it should in most countries be eligible for state incentives. For instance in Italy the Linear Mirror II has a state incentive “solare termico” of 6,100 € (8,500 € if used with a solar cooling system). Depending on the users actual situation, the investment returns in few years.

The mirrors reflect about 90% of the incident light. Also in the future, no mirror will ever exceed 100% reflection, therefore also future systems will not have a significantly higher efficiency as the present system. Therefore there is no need to substitute the Linear Mirror II during its live time with a newer system.

Correspondingly the investment “Linear Mirror” is not to be compared to the investment “computer” - a computer must be substituted after a few years already due to the fast technical progress in this field. A Linear Mirror rather compares to a building. However, a building has a typical ROI of 30 years, while it is only a few years for the Linear Mirror II device. The annual interest of the investment is more than 10%.

In Italy, the mirror can be bought without any investment at all: Isomorph has a convention with its bank, which finances the Linear Mirror II including all secondary costs. In Italy, this credit can be paid back first from the incentive “conto termico”, then from the energy saving in 5 years.



Transparency

Isomorph has a policy of total transparency: the technology is published in scientific articles, the Solar Keymark test report with all technical specifications is made public, a device is online on our web site.

The Linear Mirror II is for everybody, everywhere

As an interesting element of modern architecture, a Linear Mirror II was shown at the XIV edition of the Architecture Biennale at Venice at the Fltija Pavilion (in "Reflecting Venice" of E.Mazzi). After the Biennale the Mirror went to the Botkyrkra Museum for modern art at Stockholm, where it will produce art and energy at the same time.



In an international competition the Hong Kong Science and Technology Park has chosen the Linear Mirror II as one of the most interesting new technologies world wide: the Mirror is also able to transform cheap biomass (like hay or straw) to charcoal by means of solar pyrolysis, as first published by Isomorph in 2013. This "solar carbon" allows in an economic way to completely eliminate smog and is CO2 neutral. It is also a way of storing solar energy for the winter without losses.

According to the medieval writer Tzetzes, Archimedes used a device similar to the Linear Mirror for defending Syracuse -Tetztes' description very well fits the Linear Mirror, but does not fit at all the conventional devices. With the death of Archimedes his technology got lost, until Isomorph found it again 2300 years later.

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