

JVR Solar Energy Turbine



Why should we continue to consume our natural resources and pollute the planet when we have the largest inexhaustible source of energy right in front of us: the Sun?

CURRENT TECHNOLOGY

Currently there are two main types of technology being used for the production of solar energy, one which uses photovoltaic panels and one which uses thermal collectors. But both of these technologies have several problems:

- **Photovoltaic panels:** In its current state, it has technological difficulties. Its production losses, close to 9% per year, pose important limitations, The economic viability of this technology is directly related to the ability to obtain government grants and allowances, as this type of technology would otherwise never be viable in its present state.

- **Thermal collectors:** Its operation for optimal performance is requires water, for the production of steam to move turbines. It is a relatively expensive technology and consumes water, which is not always a readily available resource in areas with strong sunlight.

Thermal Sun Tower Plant of GEMASOLAR:



<u>Power output</u> \rightarrow **20 Mw/h**

<u>Location</u> \rightarrow Andalucía (SPAIN)





SOLAR THERMAL TECHNOLOGY





The current situation shows that with these technologies there is still some way to go before they can be economically viable. Because of this, scientists and engineers need to change their cognitive mindset and take a step, in order to evolve beyond the steam locomotive and the Stirling motor.

This is the step we have taken to achieve clean, affordable energy production, with no water consumption.

<u>The</u> <u>Past:</u> Steam <u>TheFuture:</u> JVR Solar Turbine



SOLAR ENERGY PRODUCTION

SOLAR TURBINE

Sistema para Torre Termosolar con irradiación mediante espejos, o con parábola con menor tamaño de turbina, según proyecto JVR





Cold air enters the turbine and is pushed by the blades toward the dual chamber drum where it begins to heat up. The air continues to move along the walls of the turbine until it reaches the Fresnel lens which concentrates the rays on a specifically designed part which causes the air to overheat and expand, which in turn makes the turbine turn at a high speed, producing energy. As the air exits the turbine, it heats the salts/gels inside the drum that accumulate heat so it can be used to produce energy when there is no sunlight.



The air heating process is repeated again and again achieving a uniform air temperature in the process.

We are talking about 85 cycles in one second and the process is continuous as long as there is direct sunlight. When there is no sunlight, a computerized control system will automatically regulate the turbine so that it uses the heat energy stored in salts/ gels and, if necessary, there is a fuel injection option that ensures stable 24-hour production.



TURBINE APPLICATIONS

To achieve maximum efficiency in generating electricity, the JVR solar turbine can be implemented in two systems:

Solar Tower

Solar Parabolic Dish





<u>20 Mw</u>



The JVR solar tower technology is based on production of 20 Mw/h of energy and has the following features:

- Occupies less land→ 40% less.
- -Does not consume water.
- 24-hour energy production.
- Produces water.
- Can clean sewage.

PARABOLIC SOLAR COLLECTOR

<u>15 Kw</u>



The parabolic solar collector technology bases its concentration of the sun's rays on the sensor lens of the JVR turbine, installed at the front, which reaches high temperatures. The maintenance required for this type of equipment is less than other systems (twice a year). Regular cleaning of the parabolic dishes will be automatic.

COMPETITORS





Stirling Motor



<u>JVR Turbine</u>

| | Power output | Temperature | Price | Cogeneration by heat accumulator(+20%) |
|------------------------------------|-----------------|-------------|---------|--|
| Parabolic dish + Stirling motor | 3.5 Kw/h | 800 C° | 18.900€ | X |
| Parabolic dish + JVR turbine | 15 Kw/h | 1150 C° | 30.000€ | \checkmark |

First JVR Prototype





First prototype made to testing equipment effectiveness

Areas with highest solar efficiency



📕 Excellent 🗧 Good 📒 Suitable 🔳 Unsuitable

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Solar radiation in Europe



THE MARKET

As shown in previous pages, JVR technology must be applied in areas with levels of solar radiation per year high enough to make the investment profitable, so we must focus our efforts on those areas where it is possible to obtain a good performance in daylight hours.

In addition, potentially large markets for the installation of JVR towers are areas where there is a shortage of water, which usually also receive a lot of sunlight. Spain and Portugal are the areas of greatest solar radiation index throughout the Mediterranean basin.

But we must pay attention not only to the solar radiation conditions of each country, but also to energy legislation as well as the pricing scheme put in place by each country.



<u>Growth forecast for solar energy in</u> <u>the Mediterranean basin.</u>



The Factory

The project needs an investment in order to meet the operating costs for the first year, sourcing, and installation of a production unit. This factory does not need to be too complex because it will be a fitting and assembly unit.



EXECUTIVE SUMMARY

THE TECHNOLOGY

The increasing demand of humans for energy is a present reality we need to address with non-polluting technologies like the JVR solar turbine. In Spain, only 30% of the energy consumed is actually produced there. This means importing 70% from neighboring countries. This new technology will allow us to produce 3.5 times more energy than is produced by existing technology (parabolic solar collectors with Stirling motors and solar thermal towers), with the same investment, thus achieving much higher efficiency. JVR technology is also capable of generating, desalinating, and treating large amounts of water, a very important issue in countries where water is a scarce resource.

All patents on JVR technology have either been granted or are pending.

This technology is capable of supplying this large demand for energy and contributing in large part to supply water to certain countries.

The inventor of the technology requests from investors, in exchange for contributing this invention to the new company and his commitment to remain a part of the company and continue to improve the technology and develop new products, the following :

-To have at his disposal as soon as possible a laboratory in order to continue his research in several fields, which will yield new products for the company. -Payment of 6 million Euros in consideration for assigning the technology to the new company.

-Payment of royalties in the amount of 4% of profits.