

Description

Generation of Electricity with water artificially generated at great height

The present invention concerns a generation of electricity with water artificially generated at great altitude in accordance with the generic term of claim 1.

The generation of electricity as such will become more and more important in the future, due to the energy carriers becoming scarce, the energy supply and particularly the generation of electricity together with a permanently rising energy consumption, becomes more difficult. Particularly in areas that are in need of energy resources, either the energy resources have to be laboriously brought there or electricity is brought into these areas by overhead transmission lines. Particularly in mountainous areas such transport ways are extremely difficult to build.

For avoiding such laborious transport lines, for example in DE 36 19 269 a device is described that presents a substantially conical tapered tower, which is arranged above a ring channel, that is fed with water taken from a neighbouring river. In the wall of the tower there is situated a number of standpipes, in which an energy carrying steam rises to an upper platform, where the steam is liquefied in condensers. The liquid energy carrier falls in a down-pipe arranged inside the tower, which is connected to a liquid turbine, back to the plane of the ring channel. From there the energy carrier arrives in the heat exchanger arranged in the ring channel, in which it evaporates before rising in the standpipe. In order to start this circulation, for example additional external energy sources are necessary. This is an additional considerable burden for the environment, since additionally a considerably energy expenditure is necessary.

The object of the present invention is to develop a known generic device in such a way that it works in a possibly environment-protecting manner and without external energy supply.

This object is solved by the features of claim 1.

Advantageous embodiments of the present invention are object of the dependent sub claims.

According to the invention generation of electricity is provided with water artificially generated in great height, in which the water-containing medium is ambient air namely a surrounding air, in the pipes being arranged heating elements, and in the valley position the surrounding air is additionally heated by black varnished surfaces exposed to the sun.

With this measure one obtains that no further special energy carrier is provided, but only the already present surrounding air needs to be used as energy carrier, the pipes equipped with the heating elements preventing an early condensation. It has been found out that the generation of electricity according to the application can be done particularly well on slopes, and that a corresponding temperature gradient works particularly well at altitudes of 4000 m. For example the generation of electricity could be used well in the area of the Mount Kinabalu Borneo, since the mountains rise directly out of the sea level with altitudes of up to 4000 m and the presumed temperature of the heated air in the valley amounts to ca. 50°C. Basically, in order to induce the condensation of the hydrous medium, it is advantageous to provide, besides the cold air condensation, a cooling chamber, which can be arranged for example inside the mountain, so that the water originated by the condensation of the water-containing or hydrous medium because of the natural cooling can further cool the cold air, if necessary, or, if a water shower is provided for increasing the condensation, that the water necessary for the water shower can be added also from the cooling chamber. In this way expensive refrigerating plants or units are avoided.

If according to claim 2 the pipes are equipped with ventilators, in this way on the one hand, the uplift can be supported. On the other hand there is the possibility, in the case of a very strong buoyancy in the upward air current channel, of having also an additional generation of electricity as a welcome side effect.

If according to claim 3 the cold air is powdered with dust particles, there are condensation germs present, which favour the water formation from the surrounding air and thus support the condensation of the water.

If the black varnished surfaces are equipped as aluminium sheet according to claim 4, a heat build-up can be generated, that additionally heats the surrounding air.

If according to claim 5 the aluminium sheet is covered with a glass plate, the sheet metal is protected against dirt.

If according to claim 6 a water shower is provided for the hydrous medium, in this way again the precipitation of water is favoured, as the water shower adds cold water.

According to the placement of the electric power production plant it may be advantageous to apply the sun energy on the black varnished surface according to claim 7 by concentrating it by prisms and mirrors.

If according to claim 8 the pipe leading up from the low level consists of several pipes, corresponding flow properties can be taken into account.

If according to claim 9 in addition to the integration of the cooling chamber in the mountain, the cooled water is led to the water shower, a natural circulation for the cooling and intensification of the condensation by water is provided.

It is equally advantageous if the condensation of the water is supported by a vibration means, preferably by a gong integrated in the mixing chamber.

Based on the following drawings, the function principle of the electric power generation will be described more in detail.

Fig. 1 is a overview drawing of the device for the generation of electricity.

Fig. 2 is a more detailed front elevation drawing, for the collection of the surrounding air.

Fig. 3 is a partial drawing concerning the condensation of water.

Fig. 4 schematically shows a partial range of the present invention.

The general view depicted in Fig. 1 on the one hand shows the arrangement 1 to generate electricity by means of artificially produced water at great height by putting aluminium panel 2 at valley level which heat the surrounding air with solar energy and transport the ascending air via a system of pipes 5,9 to areas at a higher level. The aluminium panels can either be set up in the valley or at valley level on the hillside. To increase the characteristic heating up process sunrays can be led onto the black lacquered aluminium panels depicted as black lacquered areas 2 via prisms or mirrors 3,4. As a protection against filth there is provided a glass top 18 which covers the inlet pipes 5. In these inlet pipes 5 there could be

positioned ventilators, furthermore in higher areas there could be heating rods 7 in these pipes to prevent early condensation.

To optimise the surrounding air which has to be transported it is useful to collect – as shown in Fig. 2 – the surrounding air e.g. in a certain system of pipes 5,9 to then be induced into the up current pipe.

In accordance with Fig. 3 the generation of electricity is for example made possible by bringing together warm air from valley level and cold air from hill level which thus condense. To achieve this the warm air is brought together with cold air which can e.g. be drawn in by a ventilator via a pipe leading from lower level to this height.

Due to the intermixing the water condenses, which is collected in the lower area of the mixer chamber 11 and then led back to valley level by drainpipe 15. In addition a water shower 13 is provided which is meant to support the condensation, it carries water into the mixer chamber via a pump. To further raise the increase of condensation a container 17 for dust particles is provided which are also mixed with the cold air and the warm air from valley level.

In fig. 4 there is presented schematically the cool chamber 31 which is necessary for the generation of electricity. The cool chamber in this case is lined up to lead the already condensed water from the mixing chamber over a drain pipe which goes into the mountain into the cool chamber 31. The drain pipe 33 is preferably arranged inclined towards the flow direction so that there is no need for further pumping power.

The water cooled down by the transfer of cold from the mountain to the mixer chamber is transported by means of a pump plant 35 to the water shower 13, thus the additionally chilled water is provided to support the condensation of the water which is contained in the surrounding air. By this way a circulation is created without further cooling units or cooling devices. Furthermore you find a vibration-device in fig. 4, which project into the mixer chamber in order to cause an increase of the condensation due to the induced vibration. In this case the gong 37 is presented as the means of vibration, but there could also be further vibration devices which contribute to the process of condensation.

In general, the invention of the generation of electricity with artificially produced water on high mountains or towers is characterised by the warming up of air in valley level in order to generate electricity. This is characterised by an area of land which is covered by black varnished aluminium panels to create a heat built-up or concentration. The sun heat is additionally activated by prisms, mirrors or similar devices. This panel is protected against filth by a glass top. The aluminium panel is attached in a favourable angle of incidence to the sun, then the warm air which was produced in order to generate electricity is transported in isolated pipes to high mountains or towers, and the impetus or up-lift of the air – if necessary – is promoted by putting ventilators into these pipes to reinforce the up-current, and by installing heating rods to keep the air from early cooling and thus from condensation.

For the purpose of generating of electricity cold air on high mountains or towers is drawn into big pipes or chambers by ventilators, here it is mixed by force with warm air which was transported up from valley level, thus an artificial thunderstorm is created inducing a high production of water. The condensation of the air is further promoted by spraying the cold air with dust particles when it is drawn into the pipes so that there are nuclei of condensation for the formation of water. The mixed air is then led to a water shower with a water pump to force the formation of water. The condensation is promoted by other supplies e.g. by the adding of oxygen.

The produced water is collected in a water canal or container and in a pipe with a steep gradient brought to the turbine with a generator to produce electricity. The rest of the air is passed on to the atmosphere. After the generation of electricity, the water is used for other aspects, since there is no pollution it can e.g. be used for households or nurseries. In case there is a strong up-lift in the up-current pipe further generation of electricity could be possible as a welcome side-effect by attaching a ventilator with generator.

Furthermore the generation of electricity with artificially produced water on high mountains or towers is characterized but by the fact that to generate electricity the

warmth of the sun in valleys is activated by covering an area of land with black lacquered or varnished aluminium panels and by using prisms and mirrors to enhance the influence of the sun.

The transport of warm air by isolated pipes to high mountains or towers due to its own impetus can be supported by ventilators and heating rods which are installed in the pipes. To generate electricity on high mountains or towers colder mountain air is drawn in by ventilators. To produce water the warm air which was transported up is mixed compulsorily with the drawn in cold air in the high area in big pipes or chambers

To support the formation of water in the mixed air there are added dust particles to make the condensation of the air possible, therefore the mixed air is additionally led through a water shower to force the formation of water.

The produced water is collected in pipes or chambers by the artificially created thunderstorm and then led to the valley through drainpipes or down-pipes to be used in a turbine and generator to generate electricity.

After the generation of power the water is used for other aspects e.g. as water for households and nurseries.

In case of a strong up-current in the warm air channel this can also be used to generate electricity as a side effect.

In principle, warm air in a valley is created by activated solar energy in order to generate electricity, this warm air is transported to high mountains or towers in isolated pipes, hereby the up-lift of the air is supported and an early condensation is prevented. In addition cold air is drawn in in order to generate electricity or produce water on high mountains or towers, and the warm air which was transported up from valley level is mixed by force with the cold air on high mountains or towers in big pipes or chambers in order to produce

electricity or water, so that an artificial thunderstorm causing a large formation of water is induced. The condensation of air is promoted by adding dust particles respectively by spraying the mixed air with a warm shower. The artificially produced water is stored and then led to the valley over a turbine and a generator to generate electricity. After the generation of electricity the water is used e.g. in households or nurseries.



Claims

1. The generation of electricity with artificially produced water at great heights with pipes leading from a lower level to these heights in which having been heated up by solar energy a hydrous medium rises, this medium precipitates water by condensation having been cooled down by cold air in the higher area, this water falling down drainpipes turns a turbine which is connected to a generator generating electricity, is characterised by,
 - a) the hydrous medium being the surrounding air
 - b) heating elements being arranged in the pipes
 - c) the surrounding air at valley level being additionally heated up by black varnished surfaces exposed to the sun, and
 - d) a cooling chamber provided.
2. The generation of electricity in accordance with claim 1 characterised by ventilators (6) which are installed in the pipes (9).
3. The generation of electricity in accordance with claim 1 or 2 characterised by dust particles which are sprayed into the cold air.
4. The generation of electricity in accordance with one of the claims 1 to 3 characterised in that, the black varnished surface is an aluminium sheet.
5. The generation of electricity in accordance with claim 4 characterised in that the aluminium sheet is protected by a glass top.
6. The generation of electricity in accordance with one of the claims 1 to 5 characterised by a water shower being provided for the hydrous medium.

7. The generation of electricity in accordance with one of the claims 1 to 6 characterised by focussing the solar energy by prisms and mirrors onto the black varnished panels.
8. The generation of electricity in accordance with one of the claims 1 to 7 characterised by the pipes leading from a lower level to these heights being combined of several pipes.
9. The generation of electricity in accordance with one of the claims 1 to 8 characterised by the cooling chamber being integrated in the mountain and the cooled water being brought to a water shower.
10. The generation of electricity in accordance with one of the claims 1 to 9 characterised by supporting the condensation of water by a means of vibration, preferably a gong.

