Solar energy combined with cold energy power generation

What is combined power generation and cooling system?
This study investigates the combined power generation and cooling system using the combination of ORC and vapor compression cycle (VCC), where ORC is powered by a parabolic trough solar collector. Thermodynamic and economic simulation of the system is conducted for four different working fluids, which are R245fa, R114, R600 and R142b.

What is combined solar Orc-VCC power plant?
This paper presents 3E analyses of combined solar ORC-VCC power plant. The combined power generation and cooling systemusing an ORC powered by solar energy source and a VCC is analyzed using thermodynamic and economic simulation for four different working fluids,which are R245fa,R114,R600 and R142b.

What is cold energy?
The cold energy is a unique form of energy- since it is in cryogenic states,it can be utilized to supply thermal energy required for applications that operate at low temperatures.

How to transfer LNG cold energy into other forms of cold energy?
Transferring LNG cold energy into the other forms of cold energy which are storable for a long period of time is desirable. The energy storage system can release the stored cold energy by power generation or direct cooling when the energy demand increases rapidly.

Can a new powergenerating cycle be used for cold exergy of natural gas?
Tomków ?, Cholewi?ski M. Modelling of a novel powergenerating cycle for the utilization of the cold exergy of liquid natural gas with the adjustable parameters of working fluid. Energy Conversion and Management, 2019, 201: 112178 Mahmoudan A, Samadof P, Hosseinzadeh S, et al.

What is concentrating solar power (CSP)?
In concentrating solar power (CSP) systems, such as those using heliostats, mirrors reflect solar thermal energy towards a central receiver where the heat is collected and used for generating power. However, not all of the thermal energy collected is effectively utilized, and some energy is inevitably lost to the atmosphere and is calculated by Eq.

The improved system integrates a precooler and solar collectors into a double-loop combined cycle system. A comparative analysis between the proposed system and ...

6 ???· This study investigates the technical, economic, and environmental feasibility of ...

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The DC method involves pressurising LNG with seawater to facilitate its regasification, subsequently driving an expansion turbine for power generation [21], as shown ...

Chenghao Li et al. proposed a double loop combined cycle (2 condensers in series for recovering the LNG cold energy) for power generation using solar energy as a heat ...

A mechanical engineering research team developed and tested a dual cooling and power strategy that simultaneously harvests solar energy in a solar cell and directs heat ...

This review paper outlines the role of solar energy in the generation of power ...

Eghtesad A, Afshin H, Kazemzadeh Hannani S. Energy, exergy, exergoeconomic, and economic analysis of a novel power generation cycle integrated with ...

A solar-operated energy system that simultaneously produces three forms of ...

Harnessing the cold energy inherent in LNG transportation processes can significantly mitigate energy wastage. Employing an innovative incremental analysis ...

This paper presents 3E analyses of combined solar ORC-VCC power plant. The combined power generation and cooling system using an ORC powered by solar energy ...

cold energy utilization power generation system and aiming at the existing problems, and also combined with using geothermal resources, seawater and seawater-source heat pump ...

Solar-driven generation system recovers cold energy for electricity and heat. EU-funded researchers have developed an organic Rankine cycle that generates electrical ...

Using renewable energy as the heat source, LNG cold energy as the heat sink of the combined cycle can also be achieved to improve the power generation efficiency. Rao et ...

The current study examines the potential of utilizing the cold energy stored in liquefied natural gas (LNG) for power generation. Approximately 830 kJ/kg of the energy ...

A mechanical engineering research team developed and tested a dual cooling and power strategy that simultaneously harvests solar energy in a solar cell and directs heat away from Earth through radiative cooling.

This review paper outlines the role of solar energy in the generation of power and cooling systems that are capable of utilizing low temperature heat sources below 400°C.

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With an integrated solar thermal power of 3 MW, carbon dioxide emissions from fuel combustion were reduced to 8.3 g/kWh. On the other hand, to maximize power plant ...

Using renewable energy as the heat source, LNG cold energy as the heat sink ...

A large amount of cold energy is discarded without being utilized during natural gas transmission process. In this chapter, available cold energy in LNG and LNG cold energy ...

A transient study on a solar-assisted combined gas power cycle for sustainable multi-generation in hot and cold climates: Case studies of Dubai and Toronto. Ehsanolah Assareh *, ...

Web: https://centrifugalslurrypump.es