

NON-POLLUTING CRYOGENIC(PNEUMATIC) AUTOMOBILE

Description

Now there is great necessity in renewable energy sources and in energy-conservative technologies. It is important also, that these sources and technologies were ecologically friendly too. We developed an experimental sample of the mechanical engine that meet above mentioned requirements. In installation as a working medium it is used the liquid nitrogen, which are storied in liquid state in the heat insulated tank and can be supplied into an air heat exchanger, where it is gasified and heated by a heat of an environment. The heated gas in suppressed state is supplied into pneumatic engine performing mechanical operation in some special system (for movement of the car, for actuating an electric generator etc.). The experimental cryogenic car with similar installation is shown in picture. Power of this installation is of 0,7 kW now.

The liquid nitrogen is produced by special air-fractionating apparatus. For production of the liquid nitrogen in amount of 1 kg it is required about 1 kW-hour of electric energy. The electric power can be received from hydraulic stations, wind stations and from ecologically friendly nuclear power stations. Such processes can be organized without usage of a non-renewable resources of hydrocarbon fuels. Applying of the proposed engines leads to saving of such power source. They are ecologically absolutely friendly and can use renewable energy sources (river and tidal stations, wind, the sun) for production of liquid nitrogen from air. With allowance of high calculated efficiency coefficient of pneumatic motor (up to 60 %) in particular and the exceptions of a harm for environment of cities by internal combustion engines (ICE) offered engines for a urban transport economically are more favorable, than ICE and do not consume gasoline.

Innovative Aspects and Main Advantages

- Useful mechanical work obtained by warm of atmosphere air
- Engine work body is liquid nitrogen or liquid air

The engine does not use conventional hydrocarbon fuel in comparison with ICE.

The engine does not burn oxygen of atmosphere in comparison with ICE and it is fireproof

The engine on an offered principle is non-polluting in comparison with conventional internal-combustion engines (ICE) and eliminates diseases of the people in cities,

The engine eliminates hazard of fires from transport vehicle.

The engine is cheap at production, at operation and utilization.

The engine can have temperature below, than the environment, that makes its invisible in infra-red band of wave lengths (in comparison with ICE).

The engine requires more fuel (liquid nitrogen or air) onboard in comparison with quantity of petrol for ICE, but this lack is indemnified by the low cost of liquid gases and capability of more often refilling by liquefied gases.



Fig.1 External view of the cryogenic car

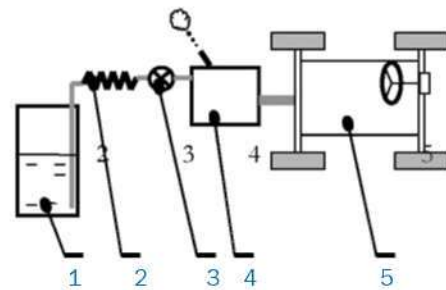


Fig.2 Scheme of cryogenic car with pneumatic nitrogen engine.

- 1- Tank-gasificator with liquid nitrogen (LN₂);
- 2- Air heat exchanger;
- 3- Gas valve;
- 4- Pneumatic motor;
- 5- Car body.

Area of Application

- Ecology pure and fireproof cars for city, plants, warehouses and airports.
- Invisible in infra-red radiation region vehicle for contra terrorism operation.

Stage of development

The novelty of installation is protected by the Ukrainian patent.

PUkr Prototype available.

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