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(54) **AUTOMOBILE ALLOCATING SOLAR ENERGY AIR-CONDITIONING AUXILIARY SYSTEM**

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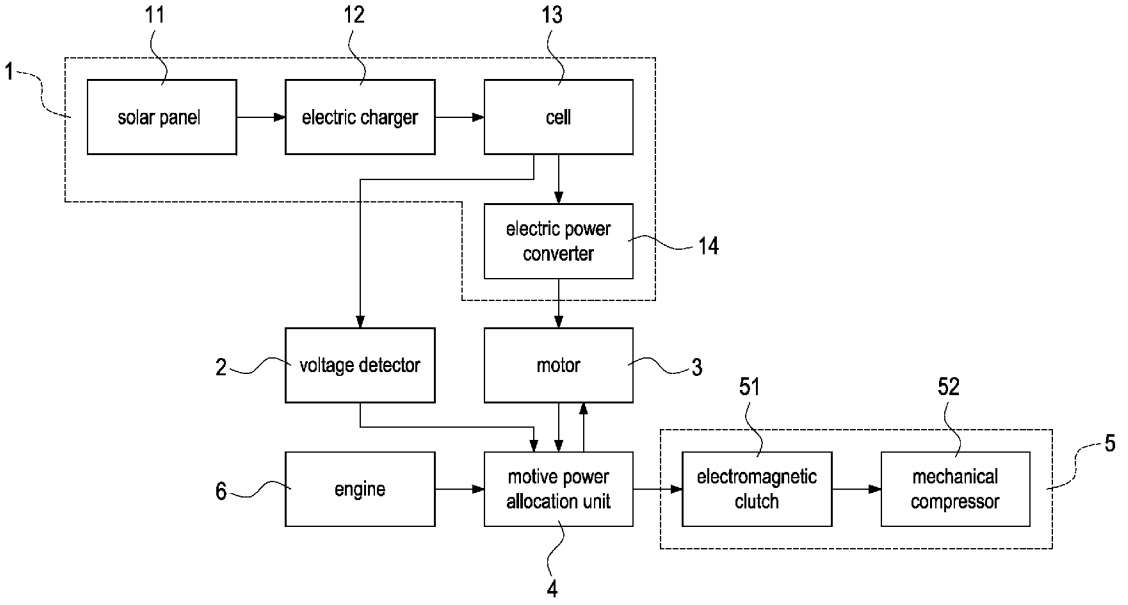
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(57) **ABSTRACT**

A solar energy air-conditioning auxiliary system includes a solar power supply, a voltage detector, a motor, a motive power allocation unit, an automobile air-conditioning system and an engine. While an automobile is being driven, the motive power allocation unit allocates and controls a motor power with a lower proportion of motor output and a higher proportion of engine output to start the operation of the automobile air-conditioning system, after the motive power allocation unit receives a signal detected by the voltage detector and the voltage of a cell is considered sufficient. The automobile air-conditioning system is operated completely by the motive power outputted by the engine to drive the automobile air-conditioning system to operate by a motive power output with the relative proportion.



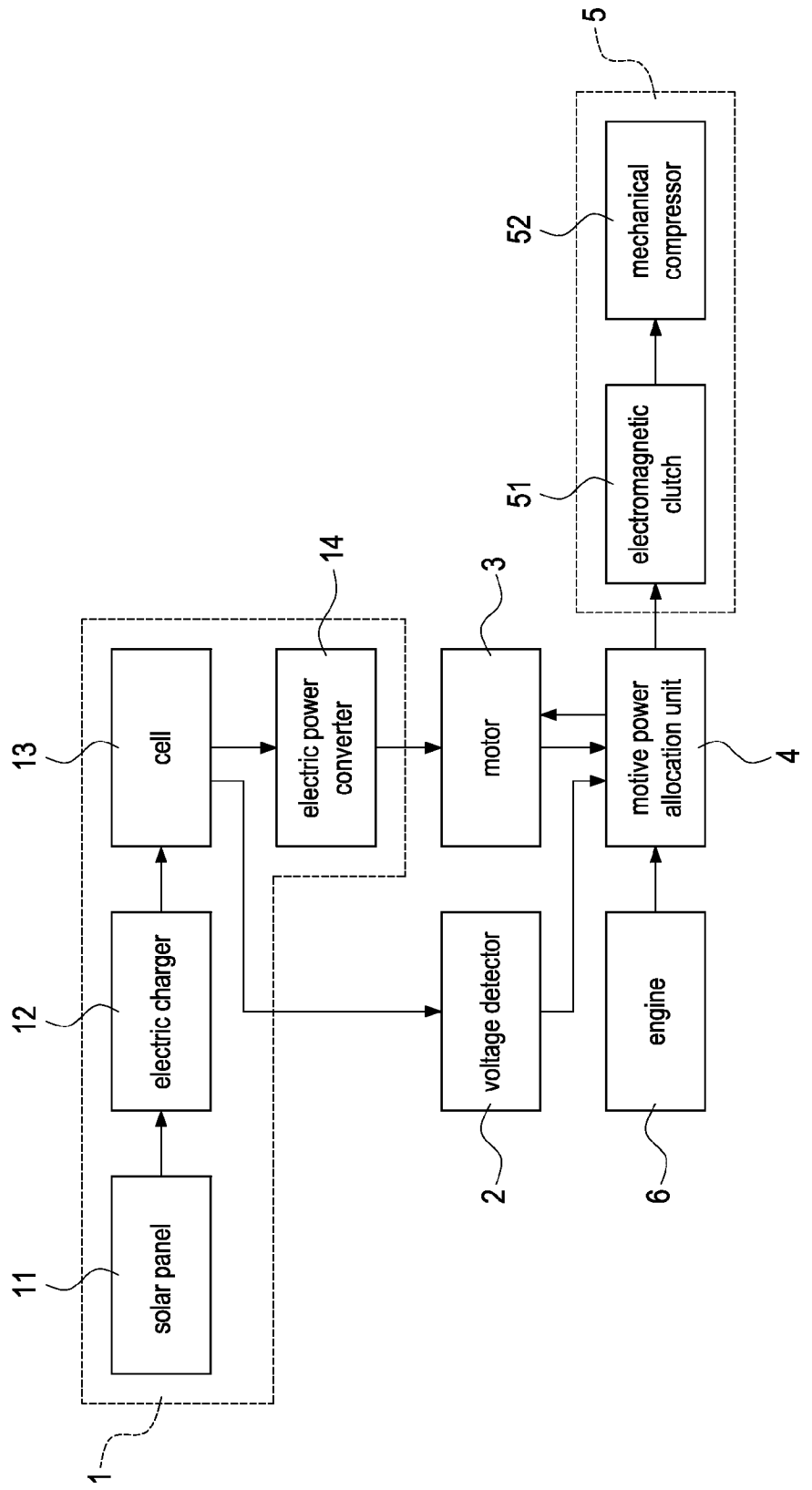

1
11
solar panel
12
electric charger
13
cell
14
electric power converter
2
voltage detector
3
motor
4
motive power allocation unit
5
51
electromagnetic clutch
52
mechanical compressor
6
engine

FIG.1

AUTOMOBILE ALLOCATING SOLAR ENERGY AIR-CONDITIONING AUXILIARY SYSTEM

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a solar energy air-conditioning system, and more particularly to an automobile air-conditioning system operated by a hybrid motive power while the automobile is being driven.

[0003] 2. Description of Prior Art

[0004] Due to the effects of global warming, fuel shortage and oil price, many products and automobiles capable of saving energy and protecting environments are developed and introduced to the market. The recent hottest topical subject is about hybrid automobiles that combine a gasoline or diesel engine with an electric engine and reduce fuel consumption and waste gas, and these hybrid automobiles are praised and welcome by consumers.

[0005] A hybrid automobile concurrently has an engine, an electric motor, and a cell to assist automobile driving. If the speed of an automobile is slow, then an automobile control system of the automobile will automatically switch the motive power to a cell for driving the motor, and then the motor will drive the automobile. If the speed of the automobile is fast, then the automobile control system will switch the motive power to the engine for driving the automobile, and thus achieving the effects of reducing the gas consumption and waste gas exhaustion. However, the selling price of hybrid automobiles is high and unaffordable to consumers yet.

[0006] Further, the issue of gas consumption is not totally a result of driving an automobile by an engine, because a driver may start the automobile air-conditioning system while driving the automobile, and the automobile air-conditioning system produces cool air to be entered into the automobile, so that the driver can drive the automobile in a comfortable manner. However, the automobile air-conditioning system has significant effects on increasing the gas consumption and reducing the loss of motive power of the engine. After the automobile air-conditioning system is started, an electromagnetic clutch in a mechanical compressor of the air-conditioning system is operated, such that a belt pulley of the mechanical compressor is driven by a transmission belt of the engine to rotate a rotor of the mechanical compressor and compress the Freon to flow, and the cool air produced by the automobile air-conditioning system is entered into the automobile, and thus increasing the gas consumption and reducing the loss of motive power of the engine.

[0007] However, the well-developed hybrid technology of combining fuel and electric energy as the motive power for an automobile air-conditioning system can be applied, such that the hybrid power can be used for driving the operation of an automobile air-conditioning system while an automobile is being driven, so as to reduce the gas consumption and the loss of motive power of the engine.

SUMMARY OF THE INVENTION

[0008] In view of the foregoing shortcomings of the prior art, the inventor of the present invention based on years of experience in the related industry to conduct experiments and modifications, and finally designed a feasible solution to overcome the shortcomings of the prior art.

[0009] Therefore, the present invention is to provide an automobile air-conditioning system operated by a hybrid power while the automobile is being driven, so as to reduce the gas consumption and the loss of motive power of the engine while the automobile is moving and the automobile air-conditioning system is operating.

[0010] The solar energy air-conditioning auxiliary system in accordance with the present invention comprises:

[0011] a solar power supply, for converting a light into an electric energy output;

[0012] a voltage detector, electrically coupled to the solar power supply, for detecting a voltage of the solar power supply;

[0013] a motor, electrically coupled to the solar power supply, and driven by the voltage outputted by the solar power supply;

[0014] a motive power allocation unit, electrically coupled to the voltage detector, the motor, the engine and the electromagnetic clutch, for allocating a motive power with the proportion of an motor output and an engine output; and

[0015] an automobile air-conditioning system, comprising: an electromagnetic clutch and a mechanical compressor coupled to the electromagnetic clutch, and the electromagnetic clutch being electrically coupled to the motive power allocation unit;

[0016] wherein the motive power allocation unit can allocate a motive power with a smaller percentage of motor output and a larger percentage of engine output to start the operation of the automobile air-conditioning system, after the motive power allocation unit receives a signal detected by the voltage detector and the voltage of a cell is determined to be sufficient. The automobile air-conditioning system is started and operated completely by the motive power outputted by the engine, if it indicates that the cell has insufficient power after the voltage detector detects a computed signal of the motive power allocation unit.

BRIEF DESCRIPTION OF DRAWINGS

[0017] FIG. **1** is a schematic circuit block diagram of an automobile solar energy air-conditioning auxiliary system in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0018] The technical characteristics, features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings. However, the drawings are provided for reference and illustration only and are not intended for limiting the scope of the invention.

[0019] Referring to FIG. **1** for a schematic circuit diagram of a solar energy air-conditioning auxiliary system, the solar energy air-conditioning auxiliary system comprises: a solar power supply **1**, a voltage detector **2**, a motor **3**, a motive power allocation unit **4**, an automobile air-conditioning system **5** and an engine **6**. A hybrid motive power is used for starting the operation of the automobile air-conditioning system **5** while the automobile is being driven, so as to reduce the gas consumption and the loss of motive power of the engine **6**.

[0020] The solar power supply **1** comprises: a solar panel **11**, an electric charger **12**, a cell **13**, and an electric power converter **14**. The electric charger **12** is electrically coupled to the solar panel **11** and the cell **13**, and the electric power converter **14** is electrically coupled to the cell **13**. The sunlight absorbed by the solar panel **11** is converted into electric energy which is transmitted to the electric charger **12**, and the electric charger **12** charges the cell **13**. The voltage is stored in the cell **13**, such that when the voltage is outputted from the cell **13**, the electric power converter **14** converts the voltage into an electric power for driving the motor **3** to operate. The solar panel **11** and electric charger **12** as shown in FIG. **1** are prior arts, and thus will not be described here. In this embodiment, the cell **13** is a battery and the electric power converter **14** is a transformer.

[0021] The voltage detector **2** is electrically coupled to the cell **13** for detecting the electric capacity of the cell **13**, and the detected signal is transmitted to the motive power allocation unit **4** for the computation.

[0022] The motor **3** is electrically coupled to the electric power converter **14** and driven to operate by the electric power outputted by the electric power converter **14**.

[0023] The motive power allocation unit **4** is a microprocessor electrically coupled to the voltage detector **2**, the motor **3** and the engine **6** for allocating the proportion of motive power outputted by the motor **3** and the engine **6**, such that if the voltage of the cell **13** is determined to be sufficient after the motive power allocation unit **4** receives a computed signal detected by the voltage detector **2**, the motive power allocation unit **4** can allocate the motive power with a relative proportion of a lower percentage (such as 30%) of motive power outputted by the motor **3** and a higher percentage (such as 70%) of the motive power outputted by the engine **6** to start the automobile air-conditioning system **5**. If the cell **13** is determined to have insufficient power after the a signal detected by voltage detector **2** in the motive power allocation unit **4** is computed, the automobile air-conditioning system **5** will be started and operated completely by the motive power outputted by the engine **6**.

[0024] The automobile air-conditioning system **5** comprises: an electromagnetic clutch **51** and a mechanical compressor **52** coupled to the electromagnetic clutch **51**. The electromagnetic clutch **51** is electrically coupled to the motive power allocation unit **4**. When the electromagnetic clutch **51** is driven and engaged with the motive power allocation unit **4**, the relative proportion of motive power outputted by the motive power allocation unit is used for driving the mechanical compressor **52** to operate and compressing the Freon to flow, such that the cool air produced by the automobile air-conditioning system **5** is entered into the automobile.

[0025] After a driver starts the automobile air-conditioning system **5** while the automobile is being driven, the voltage detector **2** transmits the detected signal of the cell **13** to the motive power allocation unit **4** for computation. If the electric power of the cell **13** is considered sufficient after the computation is performed by the motive power allocation unit **4**, the motive power allocation unit **4** will allocate a lower percentage (such as 30%) of the motive power outputted by the motor **3** or even turn off the motor **3**. If the motive power with a higher percentage (such as 70%) is outputted by the motor **3** or the motor **3** is turned off, the motive power with a percentage of 100% outputted by the engine **6** will be used for engaging the electromagnetic clutch **51** to drive the mechanical compressor **52** to operate and compress the Freon to flow, such that the cool air produced by the automobile air-conditioning system **5** will be entered into the automobile.

[0026] If the cell **13** is determined to have insufficient power after the signal **4** detected by the voltage detector **2** in the motive power allocation unit is computed, then 100% of the motive power outputted by the engine **6** will be used for starting and engaging the electromagnetic clutch **51** of the automobile air-conditioning system **5** and driving the mechanical compressor **52** to operate, and compressing the Freon to flow, such that the cool air produced by the automobile air-conditioning system **5** will be entered into the automobile.

[0027] If the power outputted by the cell **13** is low, the motive power for driving the operation of mechanical compressor **52** of the automobile air-conditioning system **5** totally comes from the motive power outputted by the engine **6**. The cell **13** will use the electric power outputted from the solar panel **11** and adopt the electric charger **12** for the charging. If the cell **13** is determined to be recovered from its electric power after the signal detected by the voltage detector **2** and transmitted to the motive power allocation unit **4** is computed, the motive power allocation unit **4** will immediately allocate a hybrid motive power with a lower percentage (such as 30%) of the motive power outputted by the motor **3** and a higher percentage (such as 70%) of the motive power outputted by the engine **6** to drive the mechanical compressor **52** to operate, such that the cool air produced by the automobile air-conditioning system will be entered into the automobile.

[0028] Therefore, the motive power allocation unit **4** can allocate a relative proportion of motive power for the output while the automobile is being driven, so as to reduce the gas consumption and the loss of motive power of the engine **6** and also save fuels.

[0029] The present invention are illustrated with reference to the preferred embodiment and not intended to limit the patent scope of the present invention. Various substitutions and modifications have suggested in the foregoing description, and other will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A solar energy air-conditioning auxiliary system, applied for an automobile that uses an engine as motive power, and the automobile has an air-conditioning system driven by the engine, and the air-conditioning system has a mechanical compressor and an electromagnetic clutch, the system comprising:

a solar power supply, for converting a light into an electric energy output;

a voltage detector, electrically coupled to the solar power supply, for detecting a voltage of the solar power supply;

a motor, electrically coupled to the solar power supply, and driven by the voltage outputted by the solar power supply; and

a motive power allocation unit, electrically coupled to the voltage detector, the motor, the engine and the electromagnetic clutch, for allocating a motive power with a proportion of a motor output and an engine output,

wherein the motive power allocation unit can allocate and control the motive power with a proportion of a motor output and an engine output to drive the operation of a mechanical compressor of the automobile air-conditioning system based on a solar energy storage status detected by the voltage detector.

2. The solar energy air-conditioning auxiliary system of claim **1**, wherein the solar power supply comprises:

a solar panel, for converting a sunlight into an electric energy output;

an electric charger, electrically coupled to the solar panel;

a cell, electrically coupled to the electric charger, for storing a voltage outputted by the electric charger;

an electric power converter, electrically coupled to the cell, for converting the voltage outputted by the cell into an electric power to drive the motor to operate.

3. The solar energy air-conditioning auxiliary system of claim **2**, wherein the cell is a battery.

4. The solar energy air-conditioning auxiliary system of claim **2**, wherein the electric power converter is a transformer.

5. The solar energy air-conditioning auxiliary system of claim **1**, wherein the motive power allocation unit is a microprocessor.

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