device. Each of the one or more energy harvesting systems is configured to generate electricity and to provide the generated electricity to the energy storage device.

In a further embodiment, the electronic latch device may further comprise an element for securing the door in a closed position. Also, the one or more energy harvesting systems may generate electricity based upon cabin vibrations, based upon motion supplied to a piezoelectric device, or based upon motion supplied to an electromechanical device. Alternatively, the one or more energy harvesting systems may generate electricity using a photovoltaic device and/or using a thermoelectric device.

In a still further embodiment, one of the one or more energy harvesting systems may be incorporated into the latch button and be configured to generate electricity using a piezoelectric device and/or an electromechanical device.

The energy storage devices may be either a capacitor or a battery. Further, a low-energy bi-stable display may be mounted on a surface of the latch button which provides an indication of a latching status of the door.

In another aspect, an electronic latching system for a stowage bin is disclosed. The system includes a first energy storage device, an electronic latch device, a latch system, one or more first energy harvesting systems, a second energy storage device, and one or more second energy harvesting systems. The electronic latch device is for opening a door of the stowage bin and is configured to open the door upon receipt of a signal on an input. The electronic latch device is coupled to the first energy storage device and is configured to receive electrical power from the first energy storage device. The latch system includes a latch button which is for activating an electronic switch, the latch system is coupled to the input of the electronic latch device. The one or more first energy harvesting systems are coupled to the energy storage device. Each of the one or more first energy harvesting systems is configured to generate electricity and to provide the generated electricity to the energy storage device. Each of the one or more first energy harvesting systems is incorporated into the latch button and is configured to generate electricity based upon piezoelectric and/or an electromechanical action. The one or more second energy harvesting systems are coupled to the second energy storage device. Each of the one or more second energy harvesting systems is configured to generate electricity and to provide the generated electricity to the second energy storage device. Each of the one or more second energy harvesting systems is incorporated into the stowage bin. The latch system is also coupled to the second energy storage device and is also configured to receive electrical power from the second energy storage device.

Each of the one of the one or more second energy harvesting systems may be configured to generate electricity using a piezoelectric device and/or electromechanical device.

In a still further embodiment, the system includes a third energy storage device and one or more third energy harvesting systems coupled to the third energy storage device. Each of the one or more third energy harvesting systems is configured to generate electricity and to provide the generated electricity to the energy storage device. Each of the one or more third energy harvesting systems is mounted outside of the stowage bin. The electronic latch device is also coupled to the third energy storage device and is also configured to receive electrical power from the third energy storage device.

In one alternative further embodiment, the one or more third energy harvesting systems may be configured to generate electricity using piezoelectric device and/or electromechanical device. In another alternative further embodiment, the one or more third energy harvesting systems may be configured to generate electricity using a photovoltaic device and/or a thermoelectric device. In a still further alternative embodiment, the stowage bin may be mounted within an aircraft and at least one of the one or more third energy harvesting systems may be configured to generate electricity by harvesting aircraft cabin vibrations.

In yet another aspect, a method of operating a self-contained electronic latching system for a stowage bin is disclosed. Electricity is generated in one or more energy harvesting systems. The generated electricity is provided to an energy storage device. Upon activation of a latch button, a signal is generated in an electronic switch that is coupled to an input of an electronic latch device. Finally, upon receipt of the signal at the input of the electronic latch device, a door of the stowage bin is caused to open by activating the electronic latch device which is configured to receive electrical power only from the energy storage device.

WHAT IS CLAIMED IS:

1. An electronic latching system for a stowage bin, comprising:

a first energy storage device;

an electronic latch device for opening a door of the stowage bin, the electronic latch device configured to open the door upon receipt of a signal on an input, the electronic latch device coupled to the first energy storage device and configured to receive electrical power from the first energy storage device;

a latch system comprising a latch button for activating an electronic switch, the latch system coupled to the input of the electronic latch device;

one or more first energy harvesting systems coupled to the first energy storage device, each of the one or more first energy harvesting systems configured to generate electricity and to provide the generated electricity to the first energy storage device, each of the one or more first energy harvesting systems incorporated into the latch button and configured to generate electricity based upon piezoelectric and/or electromechanical action;

a second energy storage device; and

one or more second energy harvesting systems coupled to the second energy storage device, each of the one or more second energy harvesting systems configured to generate electricity and to provide the generated electricity to the second energy storage device, each of the one or more second energy harvesting systems incorporated into the stowage bin;

wherein the latch system is also coupled to the second energy storage device and is also configured to receive electrical power from the second energy storage device.

2. The electronic latching system of claim 1, wherein one of the one or more second energy harvesting systems is configured to generate electricity using a piezoelectric device and/or an electromechanical device.

3. The electronic latching system of claim 1, further comprising:

a third energy storage device;

one or more third energy harvesting systems coupled to the third energy storage device, each of the one or more third energy harvesting systems configured to generate electricity and to provide the generated electricity to the third energy storage device, each of the one or more third energy harvesting systems mounted outside of the stowage bin; and

wherein the latch system is also coupled to the third energy storage device and is also configured to receive electrical power from the third energy storage device.

4. The electronic latching system of claim 3, wherein one of the one or more third energy harvesting systems is configured to generate electricity using a piezoelectric device and/or an electromechanical device.

5. The electronic latching system of claim 3, wherein one of the one or more third energy harvesting systems is configured to generate electricity using a photovoltaic device.

6. The electronic latching system of claim 3, wherein one of the one or more third energy harvesting systems is configured to generate electricity using a thermoelectric device.

7. The electronic latching system of claim 3, wherein the stowage bin is mounted within an aircraft and wherein one of the one or more third energy harvesting systems is configured to generate electricity by harvesting aircraft cabin vibrations.

8. The electronic latching system of any one of claims 1 to 7, further comprising a low-energy bi-stable display mounted on a surface of the latch button, the low-energy bi-stable display providing an indication of the latching status of the door.