FESS array has sufficient capacity to absorb the power (YES, step **800** then the array controller **130** causes the FESS units **120** and FESS array **100***c* to be configured so the FESS units **120** absorb energy and the adjustable load is set to absorb a load equal to AP, Step **804**. If it is determined that the FESS array does not have sufficient capacity to absorb the power (NO, step **800** then the array controller **130** causes the FESS array **100***c* to be configured so the FESS units do not absorb energy and so the adjustable load **180** is set to absorb a load equal to AP+abs(RS), Step **802**. After so configuring the array (steps **802**,**804**) the process returns to monitoring for signals/messages to the FESS array, step **600**, **FIG. 12A**.

[**0119**] According to another aspect of the present invention, each of the FESS arrays **100** are configured and arranged in any one of a number of fashions to control the output voltage of each of the FESS units **120** making up the array so as to assure power production from all the power producing FESS units of the array. There are shown in FIGS. **13**A-D various techniques and/or circuitry for controlling the output voltage of each FEES unit.

[**0120**] Referring now to **FIG. 13A**, there is shown a schematic diagram of an array of a multiple flywheel energy storage system illustrating a conventional master-slave arrangement. In a conventional master-slave arrangement, one of the FESS units is designated the master and to determine the output voltage for all of the FESS units. The other FESS units are slaved to (i.e., controlled by) the master so their output voltage is controlled to voltage determined by the master. Reference shall be made to the discussion regarding **FIGS. 1-2** of U.S. Ser. No. 09/998,122 (now allowed), the teachings of which are incorporated herein by reference as to further details regarding the functions and general design of the master-slave arrangement.

[**0121**] Referring now to **FIG. 13B** there is shown a flow diagram illustrating a methodology according to the present invention whereby the FESS array controller **130** controls the output voltage. When the FESS array **100**, more particularly the FESS units **120** of the array, are configured to produce power and deliver same to the electrical power distribution network (YES, Step **900**), the FESS array controller **130** monitors the output voltage of each of the FESS units, Step **904**. This can be accomplished for example, by using the output voltage operational parameter being outputted by the flywheel controller **122**.

[**0122**] The output voltage of each FESS unit **120** is evaluated to determine if the output voltages of the FESS units are synchronized or essentially the same. If the voltages are not synchronized, then the array controller **130** determines the appropriate corrected voltage that should be outputted, much like that is done by the master in the master-slave type of arrangement, and the FESS array controller **130** then outputs a signal to each of the FESS units requiring correction, STEP **908**. The electronics module **122** of each of the affected FESS units **120** adjusts the operation of the motor/generator **126** responsive to the signal from the controller **130** so that the FESS unit is providing an output voltage at the desired value. In an exemplary embodiment, the FESS array controller **130** determines such a voltage adjustment using one of a predetermined value or by controlling the voltage to correspond to the lowest output voltage for an FESS unit. If the FESS array **100** is not delivering power or the voltages of the FESS units are determined to be synchronized, then the process is ended **902**.

[**0123**] Referring now to **FIGS. 13C**, D there is shown a power regulation circuit under the control of a digital signal processor embodied in the FESS flywheel controller **122** **(FIG. 13C)** and a flow diagram of the applications program being executed in the digital signal processor **(FIG. 9D)**. Reference shall be made to the discussion regarding **FIGS. 3-7** of U.S. Ser. No. 09/998,122 (now allowed) and assigned to the assignee of the present invention, the teaching of which are incorporated herein by reference in their entirety, as to further details regarding the functions and design of the power regulation circuit, alternate embodiments thereof and the flow diagram.

[**0124**] In further aspects of the present invention, the FESS array **100** including the FESS units **120** and the array controller **130** are configured and arranged so as to ensure synchronization of the voltage and related characteristics such as phase being outputted from the FESS array with the voltage and related characteristics of the electrical power on the power distribution network.

[**0125**] Although a preferred embodiment of the invention has been described using specific terms, such description is for illustrative purposes only, and it is to be understood that changes and variations may be made without departing from the spirit or scope of the following claims.

[**0126**] Incorporation by Reference

[**0127**] All patents, published patent applications and other references disclosed herein are hereby expressly incorporated by reference in their entireties by reference.

[**0128**] Equivalents

[**0129**] Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents of the specific embodiments of the invention described herein. Such equivalents are intended to be encompassed by the following claims.

What is claimed is:

1. A method for controlling AC frequency of electrical power being distributed to an electrical distribution network that is connected to one or more electrical loads and to one or more power sources, the frequency control method comprising the steps of:

electrically coupling an energy storage sub-system to the electrical distribution network, said energy storage subsystem including one or more flywheel energy storage systems;

controlling operation of each of the flywheel energy storage systems responsive to total power being outputted by the one or more power sources and a total load imposed by the one or more loads, so the electrical storage subsystem outputs an amount of electrical energy to the electrical distribution network so as to regulate the AC frequency of the electrical power being distributed to the electrical distribution network so as to be at or about a desired AC frequency.

2. The frequency control method of claim 1 wherein said controlling includes controlling operation of each of the flywheel energy storage systems so as to reduce the amount