

STORAGE SYSTEM FOR INDUSTRIAL DEVICES

FIELD OF THE INVENTION

[0001] The present invention relates to a storage system, and more particular to a storage system for the industrial devices.

BACKGROUND OF THE INVENTION

[0002] The present industrial equipments are usually designed as two parts, wherein one part is the engineering device and the other is the storage device. Sometimes, an engineering device 11 is connected with several storage devices 12₁, 12₂, 12₃...12_n, as showed in Fig. 1. The data gained from the engineering device 1 are stored in these storage devices 12₁, 12₂, 12₃...12_n, and the operation parameters for the engineering device 11 are also stored therein. Nowadays, the industrial equipments are usually operated in harsh environments, e.g. under the extremely high or low temperature, in the vacuum chamber or in the shaking environment, and the storage devices thereof might be damaged because of these harsh conditions. Once any of the storage devices is damaged during operation, the data from the execution device might be lost, and the equipments might not work because the operation parameters are lost. Therefore, the damage of the storage devices will not only result in the interruption of the process, but also the loss of the time for repairing the equipments and the data.

[0003] For preventing the process interruption and the data loss caused by the damage of the storage devices, a storage system is provided in the present invention, which has a relay device to rebuild the lost data and maintain the function of the equipments.

SUMMARY OF THE INVENTION

[0004] In accordance with an aspect of the present invention, a storage system for an industrial device is provided. The storage system comprises

an engineering device for performing an engineering process; a relay device connected with the engineering device and transforming a format of a datum; and plural storage devices connected with the relay device and storing the transformed datum.

[0005] According to the storage system described above, the plural storage devices store the transformed datum according to a distributing from the relay device.

[0006] According to the storage system described above, the engineering device is selected from a group consisting of a lathe controller, a semiconductor manufacturing processing device and an industrial personal computer.

[0007] According to the storage system described above, the datum is one of an operating parameter and a driver.

[0008] According to the storage system described above, the relay device transforms the format into an algorithmic format.

[0009] According to the storage system described above, the storage system still works, when at least one of the plural storage devices is damaged.

[0010] According to the storage system described above, when the at least one of the plural storage devices is damaged, the relay device detects the damaged storage device and rebuilds a lost datum therein by using the algorithmic format.

[0011] According to the storage system described above, the plural storage devices support a hot plug operation.

[0012] According to the storage system described above, the plural storage devices are each selected from a group consisting of a hard disk, a memory card and a portable disk.

[0013] The above contents and advantages of the present invention will become more readily apparent to those ordinarily skilled in the art after reviewing the following detailed descriptions and accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Fig. 1 is a diagram of the conventional industrial equipment; and

[0015] Fig. 2 is a diagram of the storage system for the industrial equipment according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] The present invention will now be described more specifically with reference to the following embodiments. It is to be noted that the following descriptions of preferred embodiments of this invention are presented herein for purposes of illustration and description only; it is not intended to be exhaustive or to be limited to the precise form disclosed.

[0017] Please refer to Fig. 2, which is a diagram of the storage system for the industrial equipment according to a first preferred embodiment of the present invention. The storage system includes an engineering device 21, a relay device 22 and plural storage devices $23_1, 23_2, 23_3 \dots 23_n$. The engineering device 21 could be the lathe controller, the semiconductor manufacturing processing device or the industrial personal computer, etc. The storage devices $23_1, 23_2, 23_3 \dots 23_n$ could be the hard disk, the memory card or the portable disk, etc.

[0018] The storage devices $23_1, 23_2, 23_3 \dots 23_n$ are used to store the data gained from the engineering device 21 and the operation parameters for the engineering device 21, but the storage system has the relay device 22, which can transform these data and the parameters into an algorithmic format as a parity and distribute the parity to be stored in the plural storage devices $23_1,$

23₂, 23₃...23_n. That is the reason why the relay device 22 can keep the engineering device 21 continuously working, when one or more than one of the plural storage deices 23₁, 23₂, 23₃...23_n are damaged. When one or more than one of the plural storage deices 23₁, 23₂, 23₃...23_n are damaged, the relay device 22 can rebuild the damaged data by computing according to the parity and distribute the rebuilt data to be stored in the unused storage devices. Besides, the storage system of the present invention also supports the hot plug operation. When the relay device 22 detects that there are storage devices 23₁, 23₂, 23₃...23_n going to be damaged, the relay device 22 will notice the user to add or change to new storage devices. Therefore, when one or more than one of the plural storage deices 23₁, 23₂, 23₃...23_n have been damaged and the relay device 22 has rebuilt the data or the parameters, the user can put a new storage device into the storage system to store the rebuilt data or parameters.

[0019] Then, the engineering device 21 can work smoothly without any interruption, and the manufacturing process will not be delayed due to the damage of the storage devices.

[0020] While the invention has been described in terms of what is presently considered to be the most practical and preferred embodiment, it is to be understood that the invention needs not be limited to the disclosed embodiment. On the contrary, it is intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims which are to be accorded with the broadest interpretation so as to encompass all such modifications and similar structures.

WHAT IS CLAIMED IS:

1. A storage system for an industrial device, comprising:
 - an engineering device for performing an engineering process;
 - a relay device connected with the engineering device and transforming a format of a datum; and
 - plural storage devices connected with the relay device and storing the transformed datumwherein the relay device transforms the format into an algorithmic format, and when at least one of the plural storage devices is damaged, the relay device detects the damaged storage device and rebuilds a lost datum therein by using the algorithmic format.
2. A storage system as claimed in Claim 1, wherein the plural storage devices store the transformed datum according to a distributing from the relay device.
3. A storage system as claimed in Claim 1, wherein the engineering device is selected from a group consisting of a lathe controller, a semiconductor manufacturing processing device and an industrial personal computer.
4. A storage system as claimed in Claim 1, wherein the datum is one of an information gained from the engineering device, an operating parameter and a driver.
5. A storage system as claimed in Claim 4, wherein the storage system still works, when at least one of the plural storage devices is damaged.
6. A storage system as claimed in Claim 1, wherein the plural storage devices support a hot plug operation.
7. A storage system as claimed in Claim 1, wherein the plural storage devices are each selected from a group consisting of a hard disk, a memory card and a portable disk.