Replacement RS3 Media Flash Drives

- *Concerned about Hard Disk failures*
- *Tape backups unreliable and time consuming*
- *Searching for compatible drives at realistic prices*
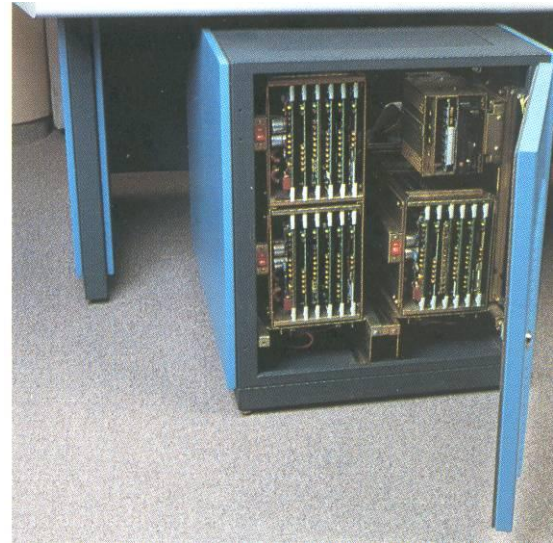- *Considering replacing your entire DCS system because of a hard disk*

Introduction

RS3 MTCC stations contain two magnetic storage devices, a Winchester Hard Disk, and a Tape Drive backup unit. The hard disk contains the console boot program, graphics, reports, trend historical and data files. In Batch processes, the disk contains the database used intensively by the ABC Batch Subsystem. The tape drive is a magnetic streamer tape used to backup and restore security copies, update system software and even reboot the console in the case of hard disk failure.

The RS3 has never updated its original media support technology and it is now extremely difficult to find compatible replacement devices. Without suitable media devices, the operator consoles, batch system and the entire DCS system becomes inoperable. Systems that do not or cannot afford to update to the Delta-V system are simply "left to die".

Why Hard Disks Fail?

Despite high quality manufacturing, it's a fact of life that hard disks will eventually wear out and fail due to mechanical and electrical components. These include damage to the **floating heads**, equivalent to a needle on a record player, the **platters**; holding all the magnetic data, the **PCB logic board** interface, the **spindle**; responsible for the high speed rotation of the platters, and **firmware** chips, containing the computer program that manages functionality.

Hard drives are also affected by **external factors** such as heat, cold, humidity, dust and electrical noise. Spare disks kept in storage also have a shelf life, due to the continuous weight on bearings, lack of use and uncontrolled ambient conditions.

Advantages of Flash Memory

Flash RAM Disks have now replaced mechanical hard disks in demanding environments, especially in extreme and industrial applications. Flash memory refers to a particular type of EEPROM, a memory chip that maintains stored information without requiring a power source.

Flash memory's advantage is that it can erase its data in blocks, making it a preferable technology for applications that require frequent updating of large amounts of data. Typical examples are USB memory sticks, mobile phones, cameras, PCMCIA memory cards, MP3 players and computer BIOS's. Optomation Systems is proud to add RS3 MTCC consoles to this list.

OPTOMATION

Back to the future

In 1986 the technology standard for defining the connection between media drives and computer based systems was the SCSI-1 protocol. This was later improved in 1994 to a newer SCSI-2 protocol. Both were used in the RS3 MTCC consoles to connect to disk and tape units. Obsolete in the 1990's, as memory storage by then was measured in GigaBytes, the industry moved onto newer standards such as SCSI-4, IDE and SATA. The RS3 was sadly left behind.

So how can the RS3 fully communicate with media technology, developed some 20 years later? The simple answer is that it can't. But it is possible to adapt today's technology to emulate the original SCSI protocols, making drives appear to be original RS3 media devices, just more reliable, faster and cheaper. In short the RS3 just doesn't know the difference.

Optomation Systems offers flash drives based on the commercially available SanDisk Compact Flash 5000 card. A special bridging board includes a complete host SCSI emulator for the RS3 drive. The end product is a plug-in substitute for your hard disk, tape unit or both, using existing power connectors, data cables and mounting screws.

What about compatibility issues?

Most of RS3's incompatibility nightmares were caused by clever hardware engineers adapting open standards to create a proprietary DCS system. Our "back to basics" solution emulates the original drive standards, avoiding compatibility problems.

The flash drives can generally be used in any 68020 o 68040 based console with the following minimum software revisions:

OI Processor	Boot Rev.	Prog. Rev.
68020	9.26	18.03
68040	10.04	18.03

Boot Revision and Program Revision are shown in the Command Console screen (CCC).

Replacement Hard Disk Media

Besides the obvious benefits of spare parts and reliability, flash disks reduce data read/write time, improving Process Graphic draw time. In ABC batch applications, where recipes, scripts, VDIMS and Material Tables are continually accessed from disk, production times may be improved.

How is RS3 operation affected?

Once installed, the use of flash drives is completely transparent to the system user. The RS3 disk operating system is not even aware of the change-out.

The only differences are:

- No magnetic tape heads means no more maintenance or backup and restore failures due to faulty media.

- Security backups are now a pleasure instead of a nightmare.

- Backup and Restore operations that previously took hours now only take minutes!

OPTOMATION

Emerson Process Management migration path

Emerson Process Management (formally Fisher Rosemount) is commercially and technically committed to substituting the MTCC consoles with Delta-V Operate Consoles. Customers are now advised that existing RS3 Media Devices are obsolete with no available substitutes.

Part Numbers

| OSHDR01 | Replacement MTCC Hard Disk Flash Unit |
| OSTDR01 | Replacement MTCC Tape Drive Flash Unit |

Please note these part numbers are not recognized by Emerson Process Management or their representatives.

Optomation Systems

Optomation Systems is an independent software house, with nearly 30 years experience of the RS3 Distributed Control System. In addition to RS3 hardware and software services, Optomation supports compatible products and solutions that provide independent migratory paths and life extension for the RS3 control system. This activity is not endorsed or supported in any way by Emerson Process Management.

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