

The Sage Advisor

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HMI/SCADA Software

With the relatively low cost and tremendous advantages offered by the inclusion of a computer-based SCADA master, it has become increasingly easy to justify their use. Today, you have the choice of several off-the-shelf HMI packages to pick from, most of which will satisfy all of your needs and more. Every package has its strengths and weaknesses. While some may provide a better solution to a networked system, others might be easier to configure. Some might have a better reporting module, while others may have flashier graphics. The most important thing to keep in mind is that almost all of them can be configured to perform the basic tasks that you require — it's just that some will do so with great consternation and others will seem to have been designed just for you.

Whether your system has one RTU or one hundred, chances are that you will be considering Windows 95™, Windows 98™ or Windows NT™ as the operating system for your base computer. Although there are some advantages to UNIX™, VMS™ and other operating systems, such as the enormous speed and power of the Alpha™, RISC-based hardware on which it runs, unless you have a fairly large system or a very good relationship with a vendor that specializes in such systems, you will probably not have this solution in mind.

Windows 3.1, while a good operating system for an office environment, does not support true multitasking, which is the ability to run multiple operations simultaneously. The way that Windows supports multiple tasks is to offer slices of time from the processor to each application in turn. As the control is passed from application to application, a real-time application such as SCADA may have difficulty. Many HMI products are such a burden to the processor that the systems have a tendency to crash whenever the computer tries to start-up another application or run a macro.

Windows 95 is a more powerful operating system, as it is truly designed to handle multitasking and is, therefore, much less likely to crash when other operations put additional burdens on the operating system. At the time of this writing, Windows 98 is a new enough technology that it isn't as stable as either Windows 95 or Windows NT; however, as new releases

become available, the few glitches that it suffers from should soon disappear.

While flashy graphics are nice and can help you assimilate the state of your system at a glance, reporting capabilities and the ability to change and grow with your needs are more important. Be sure to get a full running demo copy of each package that you wish to evaluate, as a salesman demonstrating the product can make even the most difficult tasks seem easy.

Redundant Systems

The questions about the reliability of a PC as the platform for your SCADA system can be answered by the inclusion of a back-up computer that can assume control of the system in the event of a failure of the primary computer. The way that this is generally implemented is to have two computers connected to each other through a LAN and to the SCADA system through serial ports. The computers share the data collected by the primary, as the LAN provides information about the status of each of the computers in the system. Each of the computers has a complete copy of the SCADA software running, but only one has its communications to the SCADA system activated. When the backup computer senses the failure of the primary computer through the LAN, it will become the active master and assume control of the system.

Simpler schemes use a second computer which is off-line that must be connected manually when the primary fails. While this may seem rather crude, a well-designed SCADA system may be able to operate for hours or even days without the supervisory controller. Often, RTUs can be programmed to return set-points to default values or run based on timers rather than on demand. After all, before you had SCADA, your system and others like it, somehow managed to operate.

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