

Icon-based workstation software handles mathematics and instrument-control chores

HP VEE (Visual Engineering Environment) is a software package that in its basic form, called VEE Engine, lets engineers and scientists manipulate and display data without programming. You make the software do your bidding by interconnecting icons on the screen. An optional version, called VEE Test, also controls instruments and gathers data from them.

The software runs on the vendor's HP 9000 Series 300 and 400 workstations under the HP/UX operating system. It operates in an interpreted mode, it is not a code generator, and it requires no compilation.

One of the more obvious differences between this software and other visually oriented problem solvers is the quality of the graphics. Like those produced by many workstation-based products, its graphics are highlighted and shaded to suggest three dimensions. Generally speaking, software that runs on IBM PCs and even on the Apple Macintosh does not produce such displays.

But impressive graphics and genuine usefulness are two different matters. A shortcoming of other interpreted data-manipulation packages has been speed of operation. Although HP is not yet providing performance data, the package's speed in running demonstrations seems to be quite fast.

The software's developers point out that one of the most frustrating aspects of writing data-manipulating software is that of dealing with

data types. Although the software recognizes nine data types, it usually shields users from concern about types. When necessary, the software will automatically convert a waveform into a spectrum by performing an FFT.

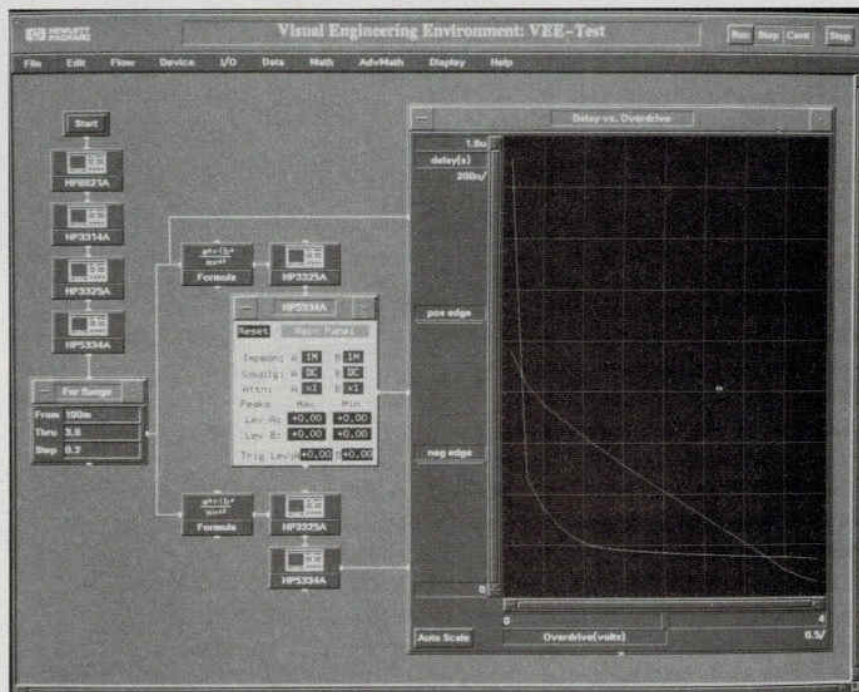
Approximately 150 objects manipulate data (analysis objects). A few categories of analysis objects are trig, array, matrix, calculus, regression, filtering, probability, statistics, and signal processing.

Although icon-based block diagrams are to a large degree self documenting, they often can't do a complete job of describing an experiment. Users of other instru-

ment-controlled software have usually had to maintain lab notebooks to hold vital information. In VEE, a notepad icon acts as a repository for such textual material. The number of such notepads is unlimited.

Even when you avoid programming by describing your procedure graphically, you don't guarantee that everything will work perfectly the first time. Most of the time, you'll have to do some debugging. A line-probe feature shows which objects are connected by a specific line. In addition, debugging tools let you insert breakpoints and show data and execution flow.

One of the beauties of conven-



Linking icons allows you to control instruments and manipulate and display the data the instruments produce. HP's VEE avoids programming yet does not sacrifice the control and flexibility normally associated with it.

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tional programming is that it allows you to use constructs that control the flow of your program. Often, when you replace program statements with a graphical flowchart, you automatically and intuitively answer questions about program flow—but not always. The software recognizes that flow-control constructs are still needed and provides a group of objects for the purpose. Included are several if/then conditional objects as well as objects to control looping and repetition.

The software requires a color display; the vendor recommends one with at least six color planes. Although the software will run on a workstation with 8M bytes of RAM, the vendor recommends 12M to 16M bytes and a hard disk of at least 200M bytes. VEE Engine costs \$995; VEE Test, including VEE Engine, costs \$5000.

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