When should a microprocessor replace hardwired logic

The question posed above is becoming increasingly common. The guidelines to dictate this choice are not too well developed at this time but some estimates place the breakpoint number of IC packages in a random logic design at anywhere from 30 to 70 packages. The old axiom, "When in doubt...." may be quite apropos here---when in doubt, choose a microprocessor.

Evaluating microprocessors

Evaluating microprocessor performance assumes a different dimension to the evaluation of other integrated circuits and presents many pitfalls. Generally speaking, the criterion for applicability is the overall performance of the microprocessor as applied to a particular application---and not such familiar parameters as clock rate, memory access time, throughput, etc.

The performance of any microprocessor is heavily dependent on parts external to the LSI chip itself and factors such as the kinds of instructions, memory addressing capability, interrupt handling, etc., all go together to determine true performance.

The cardinal rule would be for the user to define his problem, then review the processor instruction set for the ability to solve the problem, then buy the evaluation hardware.

Why the Intel Chip

We chose the Intel chip because of its availability and longevity in the field (actually is the only microprocessor chip commercially available in the strictest sense).

MPS10 Microprocessor Set

That leads us to the discussion of the new MPS10 Microprocessor Set from Logic Products. Obviously, it is a modular product for at least two very strong reasons:

1. Logical continuation of the M Series module line; this new product dovetails very well with the M Series line of modules

2. We offer a microprocessor capability with all the required peripheral ICs to effect the proper external interface to the user. This eliminates PC card layout time, shop fab, error detection, rerun through the shop, system fine-tuning, etc. We offer him debugged, checked-out operating modules.

What is the MPS10

The MPS10 is a set of five modules designed around a commercially available MOS/LSI processor chip (Intel 8008-1).

- M7341 - Processor Module (PM)
- M7342 - Monitor/Control Module
- M7344YA - 1K x 8 Read-Write Memory Module
- M7344YB - 2K x 8 Read-Write Memory Module
- M7344YC - 4K x 8 Read-Write Memory Module
- M7345 - PROM Module (socket capacity to 4K x 8)
- M7346 - External Event Detection Module

Tie-in with current Digital Equipment Corporation Computers

The Processor Module is not a minicomputer, and is not intended to compete with minicomputers--it is primarily designed as a dedicated controller--a replacement for fixed logic designs; to give some degree of intelligence to various types of data terminals; to perform virtually countless low-cost processing applications and decision-making functions. It should be considered to be an

extremely useful augmentation of, and addition to, DEC's existing arsenal of processing devices. Availability of the MPS10 will complement available DIGITAL minicomputers at the low-cost end of the cost/performance spectrum thereby broadening the applications support DIGITAL can offer the OEM and industrial user. It will also expand and broaden DEC's overall capability into a market area hitherto unplumbed and should be a very effective additional tool to offset continuing encroachment of competitors trying to reduce DEC's portion of the total processor market.