Many drive manufacturers such as Siemens and Parker SSD have developed application software (often based on Macro type solutions) that are designed to meet most common drive applications and control requirements. However, it's not unusual for certain projects to require bespoke software to be written.

One frequently asked question in applications of this nature is, "Should one use the drive's internal programming blocks or write one's own blocks in the PLC to control the machine?" The answer is not a straight forward one.

When building up a drive configuration engineers might need to employ many mathematical functions of varying complexity. Ranging from simple AND and OR gates to more complicated diameter calculation, tension profiles and PID tuning functions (Proportional Integral and Derivative terms).

Given that there are two possible solutions, some experience is necessary if the best decision is to be made.

Option 1 – using the Drive internal function block programming

Assuming the application can be controlled using the function blocks available, this option is often the quickest solution. Arranging the connectivity of prewritten function blocks with all their internal maths taken care means the engineer must only select and connect the right blocks in an appropriate configuration. Naturally, this requires good working knowledge of machine control and the control requirements of the application at hand. Nevertheless, it has definite advantages. We list these in the table below.

Option 2 - Drive programming using PLC resident functions

Learning to expertly use different drive programming packages is a complicated task that takes time. This reason often justifies an engineer's choice of hosting the drive functionality software in the PLC(**see figure 4**). Often, control data can be passed to and from most manufacturers' drives from the environment of the PLC with which the engineer is already familiar with. Thus limiting the range of software tools with which the engineer must be aware of (*table 2*).

Which programming method to use?

The best control method is circumstantial.

OEMs, for example, can benefit from using the PLC resident software option as they can have a common PLC with the flexibility to offer any type of drive to their customers.