

# 1 Introduction

As far as mechanical characteristics are concerned, plastics extruders are pretty much the same today as they were 40 years ago. They still have a drive motor, a gear reducer, a screw, a barrel, etc, all mounted on a welded steel frame. Sure, the barrel material may be a bit different, and the paint job may be a bit jazzier, but it's still pretty much the same animal.

But this is by no means true of the controls available for that extruder. Modern control systems are enormously more capable than they were in the old days. Used properly, we do not control the same things, and we do not do it in the same ways. The difference is like night and day.

There is just one rub. Many, if not most, extrusion people are not taking advantage of the control capabilities available to them. Instead of the totally automated, totally controlled systems available, most extruders being shipped today simply have a few discrete temperature controllers, along with discrete control of screw RPM and possibly an indication of pressure. They look pretty much like those extruders of 40 years ago.

Why is this? Habit, mostly. All of us tend to stay in that same old groove (or should we say "rut") day after day, year after year. In some cases, companies have made a deliberate decision to "standardize" on one make and style of extruder – a certain guarantee of obsolescence, since it precludes progress of any kind. And sometimes, either the engineers, the operators, or the maintenance people simply don't understand the opportunities for improvement in their operations that they are not taking advantage of.

It is not a new phenomenon. Machiavelli summarized the reluctance to change very eloquently 500 years ago (see *Frontispiece*). And, tragically, it is just as much of a problem today as it was then.

But American industry simply must face up to the fact that they cannot afford to build labor into their extrusion processes. If they do, those extruders are going to end up in Mexico, or Thailand, or Malaysia, or somewhere else where labor is cheap.

*Automation* and more *automation* is the only answer. It does not matter how high your labor costs are if you don't build any labor into your product. American workers, and those in other developed nations, are far better at maintaining hi-tech equipment than

workers in less-developed countries. Automation levels the playing field, as nothing else can!

It is, of course, essential that your engineers, operators, and maintenance people understand thoroughly what this new generation of controls can do and how it is done. That is the objective of this book – to give your people, in terms they can understand, the knowledge of what hi-tech control equipment can do for them, and how it can be applied and maintained.