

Practical Application of Feedback Control

CHAPTER

12

12.1 ■ INTRODUCTION

The major components of the feedback control calculations have been presented in previous chapters in this part. However, much more needs to be done to ensure the successful application of the principles already covered. Practical application of feedback control requires that equipment and calculations provide accuracy and reliability and also overcome a few shortcomings of the basic PID control algorithm. Some of these requirements are satisfied through careful specification and maintenance of equipment used in the control loop. Other requirements are satisfied through modifications to the control calculations.

The application issues will be discussed with reference to the control loop diagram in Figure 12.1, which shows that many of the calculations can be grouped into three categories: input processing, control algorithm, and output processing. As shown in Table 12.1, most of the calculation modifications are available in both analog and digital equipment; however, a few are not available on standard analog equipment, because of excessive cost. The application requirements are discussed in the order of the four major topics given in Table 12.1. A few key equipment specifications are presented first, followed by input processing calculations, performed before the control calculation. Then, modifications to the PID control calculation are explained. Finally, a few issues related to output processing are presented. The topics in this chapter are by no means a complete presentation of practical issues for successful application of control; they are limited to the most important