Introduction

Boilers are a key power source for electrical generation in the United States and around the world and for providing heat in process industries and buildings. Regardless of the capacity or fuel, there are certain fundamental control systems required for boiler control. Large utility systems are more complex due to the number of burners and overall capacity and equipment. Although there are numerous ways to achieve control, the purpose is always the same — to control the firing of a boiler safely, reliably, and efficiently.

One of the keys to good control is accurate measurement. If you cannot measure a process variable, the variable cannot be controlled. This book addresses issues to consider when defining transmitter measurements and specifications. The characteristics and sizing of final control elements are also reviewed.

This book is for anyone who works with boilers: utilities managers, power plant managers, controls systems engineers, maintenance technicians or operators. The information deals primarily with water tube boilers with Induced Draft (ID) and Forced Draft (FD) fan(s) or boilers containing only FD fans. It can also apply to any fuel fired steam generator.

Other books have been published on boiler control; however, they do not cover engineering details on control systems and the setup of the various control functions. *Boiler Control Systems Engineering* provides specific examples of boiler control including configuration and tuning.

The requirements as stated are based on the NFPA 85 Code 2007 Edition, and the following ISA standards:

- ANSI/ISA-77.41.01-2005 - *Fossil Fuel Power Plant Boiler Combustion Controls*
- ANSI/ISA-77.42.01-1999 (R2006) - *Fossil Fuel Power Plant Feedwater Control System (Drum-Type)*
- ISA-TR77.42.02-2009 - *Fossil Fuel Power Plant Compensated Differential Pressure Based Drum Level Measurement*
- ANSI/ISA-77.44.01-2007 - *Fossil Fuel Plant-Steam Temperature Controls*