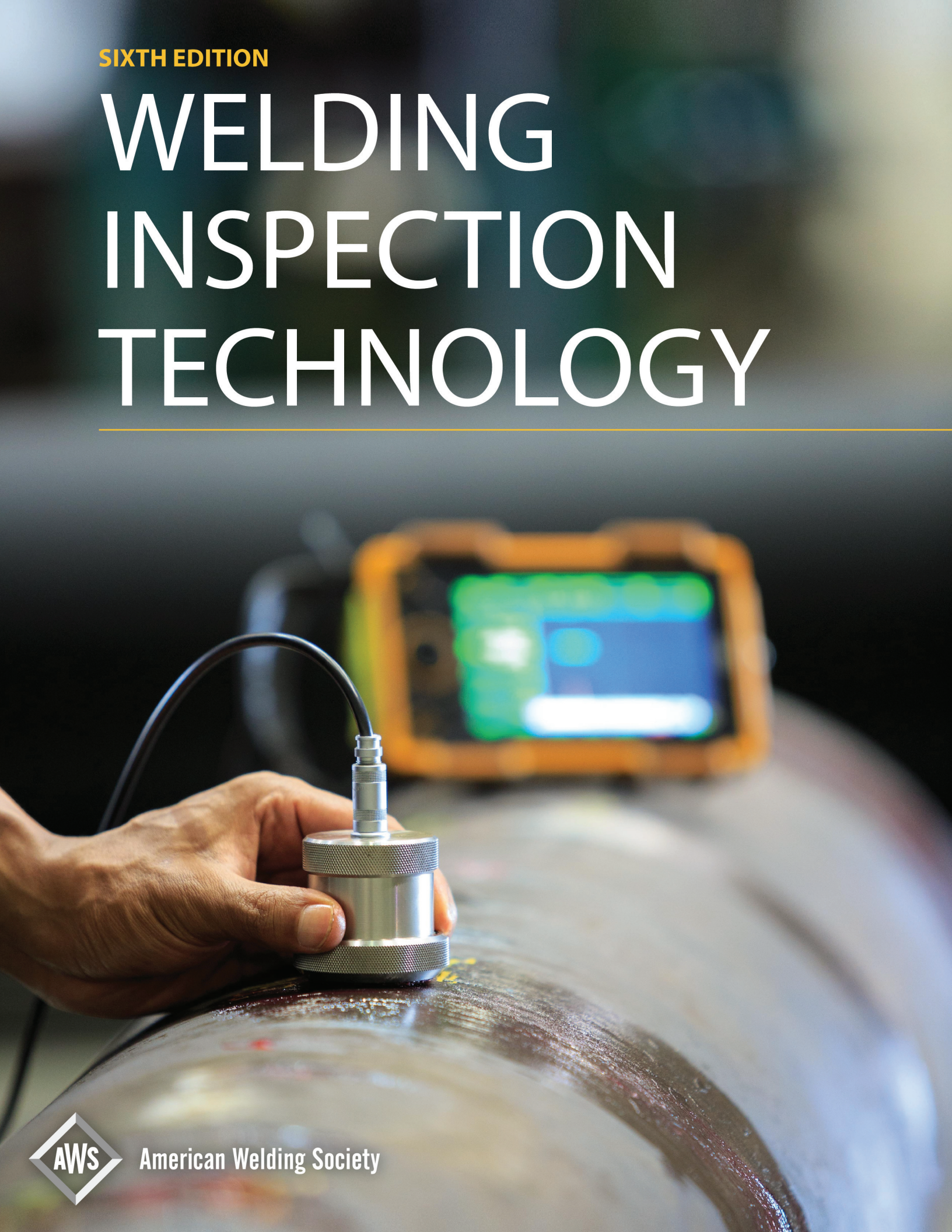
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WELDING INSPECTION TECHNOLOGY



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CHAPTER 1

WELDING INSPECTION AND CERTIFICATION

OBJECTIVES

1. Identify the responsibilities of a welding inspector.
2. Identify the desirable qualities that facilitate and enhance performance of welding inspection.
3. Discuss the various elements of the AWS welding inspector certification program.
4. Identify the minimum education and experience requirements for the three levels of AWS welding inspector certification.

KEY TERMS

American Petroleum Institute (API)

API 1104 - Welding of Pipelines and Related Facilities

American Society of Mechanical Engineers (ASME)

American Society for Nondestructive Testing (ASNT)

American Welding Society (AWS)

AWS A3.0 - Standard Welding Terms and Definitions

AWS B5.1 - Specification for the Qualification of Welding Inspectors

AWS D1.1 - Structural Welding Code - Steel

AWS D1.5 - Bridge Welding Code

AWS D15.1 - Railroad Welding Specification for Cars and Locomotives

AWS QC1 - Specification for AWS Certification of Welding Inspectors

Certified Associate Welding Inspector (CAWI)

Certified Welding Inspector (CWI)

Destructive testing (DT)

Nondestructive examination (NDE)

Nondestructive testing (NDT)

Senior Certified Welding Inspector (SCWI)

SNT-TC-1A - Personnel Qualification and Certification in Nondestructive Testing

INTRODUCTION

There has been an increasing emphasis placed on the need for quality in construction and manufacturing in the modern world. This concern for product quality is due to several factors, including economics, safety, government regulations, global competition, and the use of less conservative designs. While not singularly responsible for the attainment of weld quality, the welding inspector plays a large role in any successful welding quality control program. In reality, many people participate in the creation of a quality welded product. However, the welding inspector is one of the "front line" individuals responsible for monitoring production throughout the construction or manufacturing process.

OVERVIEW

To do this job effectively, the welding inspector must have a wide range of knowledge and skills. This book is specifically designed to provide both experienced and novice welding inspectors a basic background in the more critical job aspects. This does not imply, however, that each welding inspector will use all the information contained in this book while working for a particular company. Nor does it mean that the material presented will cover every situation a welding inspector will face. The topics included in this book are based on the general knowledge necessary for an individual to perform welding inspection effectively.

It's important to realize that effective welding inspection involves much more than just looking at finished welds. Section 4 of ***AWS QC1, Specification for AWS Certification of Welding Inspectors,*** outlines the various functions of the welding inspector. You need to become familiar with these various responsibilities because the welding inspector's job is an ongoing process. A successful quality control program begins well before the first arc is struck. Therefore, the welding inspector must be familiar with many facets of the fabrication process. Before welding, the inspector will check drawings and specifications to determine information such as the configuration of the component, its specific weld quality requirements, and what degree of inspection is required. This review will also show the need for any special processing during manufacturing. Once welding begins, the inspector may observe various processing steps to ensure that they are done properly. If all these subsequent steps have been completed satisfactorily, then final inspection should simply confirm the success of those operations.

Another benefit of this book is that it has been designed to provide the welding inspector with the necessary information for the successful completion of the **American Welding Society's Certified Welding Inspector (CWI)** examination. The welding inspector must have a working knowledge of the subjects covered in each chapter. A large part of the information presented will be a review for most individuals. However, almost everyone, will learn some new concepts as well. The eleven chapters of this book are as follows:

Chapter 1: Welding Inspection and Certification

Chapter 2: Safe Practices for Welding Inspectors

Chapter 3: Metal Joining Processes