

**Recommended Practice
for
Lighting Industrial Facilities**

Publication of this Committee Report has been approved by the IESNA. Suggestions for revision should be directed to the IESNA.

**Prepared by:
The IESNA Industrial Lighting Committee**

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Approved by the IESNA Board of Directors, August 4, 2001, as a Transaction of the Illuminating Engineering Society of North America.

Approved July 26, 2001 by the American National Standards Institute, Inc.

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Published by the Illuminating Engineering Society of North America, 120 Wall Street, New York, New York 10005.

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ISBN #0-87995-176-1

Printed in the United States of America.

ANSI/IESNA RP-7-01 Recommended Practice on Industrial Lighting

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Special recognition to F. Dickey for his work on the first draft of the revision of this standard and to P. Boyce, FIES and R. Mistrick, FIES for their contributions.

DEDICATION

The IESNA Industrial lighting Committee would like it noted that Charles Amick contributed greatly to the development of this document. The committee, therefore, dedicates this recommended practice to the late Charles Amick.

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FOREWORD

(This Foreword is not part of the American National Standard and Practice ANSI/IESNA RP-7-01.)

While the objectives of this Recommended Practice are to give a comprehensive treatment of lighting in the industrial environment, there are many spaces in a modern industrial complex that are used for purposes other than manufacturing. These include offices, meeting, conference and reference spaces. It is suggested that the reader refer to the most recent version of these other IESNA Recommended Practices and Design Guides for the appropriate lighting recommendations for spaces not covered in this publication:

ANSI/IESNA RP-1, *Recommended Practice on Office Lighting*
 IESNA RP-5, *Recommended Practice of Daylighting*
 IESNA RP-20, *Recommended Practice on Lighting for Parking Facilities*
 ANSI/NECA/IESNA 502, *Recommended Practice for Installing Industrial Lighting Systems*
 IESNA DG-2, *Design Guide for Warehouse Lighting*

1.0 INTRODUCTION

A well-designed lighting system can make an important contribution to the success of an industrial facility. Unfortunately, too often the lighting is treated as an afterthought during the planning and construction of these facilities. Great attention is paid to the physical dimensions of the building, to the flow of the process and materials, and to production equipment.

It is common that only horizontal illuminance is considered in providing an environment in which to perform industrial tasks. However, many industrial tasks do not occur in a horizontal plane. There are many features of the lighting system, other than quantity of light, which make a significant contribution to the efficiency of the industrial worker. Placement of the luminaries is critical to providing light of the proper quality, as well as quantity and direction, to allow fast, easy recognition of operations, which may be taking place at high speeds in portions of production machinery where ambient light cannot easily penetrate. Selection of the luminaire distribution can be important to rendering the visual task properly when that task is multi-dimensional rather than flat, and when the task occurs in a plane other than horizontal. The operation of the light sources must be understood to ensure that the proper lamps are selected. Improper light source choice can result in difficult and potentially dangerous conditions caused by long

warm-up periods or stroboscopic effects created where rotating parts are present. The ability of the lamps to render colors accurately may have an effect on the recognition of colors or product components and safety colors used to protect the workers from dangerous conditions within the work place. Many industrial operations take place in hostile environments, and the hardware used in these locations must be designed and manufactured to survive these conditions. For these reasons, and many others, great care is required to provide an effective, efficient and readily maintainable lighting system to help modern industrial workers produce at the peak of their ability in a safe environment.

2.0 LIGHTING THE INDUSTRIAL ENVIRONMENT

Providing a successful lighting design for a modern industrial facility is a complex task. In the last three decades of the 20th century, much has been learned about lighting and its possible effects on the well being of people. The goal of providing an efficient, reliable and easily maintained lighting system, making use of all of the knowledge available to the designer today, is a task that requires experience and considerable planning.

2.1 General Design Considerations for Lighting Industrial Areas

The designer of an industrial lighting system should carefully consider all of the following design criteria since any single issue, or combination of several, could be important in planning a successful industrial lighting installation. (These criteria are not necessarily arranged in order of importance since priorities will vary for different industries or different locations within an industrial complex.)

1. Determine the *quality* of illumination for the manufacturing processes involved. (See the Industrial Lighting Design Guide in **Figure 1 (a)** and **Section 3.0**.)
2. Determine the *quantity* of illumination for the manufacturing processes involved. (See the Industrial Lighting Design Guide in **Figure 1 (a)** and **(b)**, **Section 4.0** and **Annex C**.)
3. Determine the lighting required for safety and ensure all three conditions (quality, quantity and safety) are properly weighed and addressed in the final design.
4. Select listed or approved lighting equipment that will provide the requirements of quality and quantity, including photometric characteristics, as well as the mechanical performance required to meet installation and operating conditions.
5. Arrange equipment so that it will be safe, easy and