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LIGHTING FOR ICE SPORTS

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C I E TECHNICAL COMMITTEE REPORT

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Summary

This report presents a survey of experience in lighting for ice sports in particular for skating, figure skating, ice hockey and curling.

The report specifies general lighting requirements with regard to illuminance, uniformity, modelling, glare control, color and color rendering. It provides guidance for selecting lamps and luminaires as well as for the arrangement and installation of the lighting system.

Résumé

Ce document offre une vue d'ensemble de l'expérience acquise pour l'éclairage des sports de glace, en particulier le patinage classique et artistique, le hockey sur glace et le curling.

Ce rapport donne, pour l'éclairage général, des prescriptions d'éclairement, d'uniformité, de relief, de limitation de l'éblouissement, de couleur et de rendu des couleurs. Il contient des indications, à la fois sur le choix des lampes et des luminaires et sur la disposition et l'installation du système d'éclairage.

Zusammenfassung

Dieser Bericht gibt einen Überblick der Erfahrungen bei der Beleuchtung von Eissport-Anlagen, insbesondere für Eislauf, Eiskunstlauf, Eishockey und Eisstockschießen.

Der Bericht spezifiziert allgemeine Anforderungen an die Beleuchtung in Hinsicht auf Beleuchtungsstärke, Gleichmäßigkeit, Modellierung, Blendungskontrolle, Farbe und Farbwiedergabe. Er gibt Hinweise zur Auswahl von Lampen und Leuchten sowie zur Anordnung und Installation des Beleuchtungssystems.

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1. INTRODUCTION

The recommendations apply to the artificial lighting of outdoor and indoor ice rinks for the following

types of sport: Amateur skating (for recreation)

Speed skating

Figure skating

Ice Hockey

Curling

2. GENERAL LIGHTING REQUIREMENTS

2.1 The visual task

High standards of lighting are required for competitive ice sports to ensure that the skaters and the spectators can follow the rapid movement that occurs. This applies in particular to ice hockey, where the small, fast-moving puck must be clearly seen. These requirements are particularly exacting in large halls where the spectators are at some considerable distance from the playing area. The visibility of moving objects is dependent upon the angular size, speed and luminance contrast of the object, the luminance of its background and the luminance of the surroundings.

The most demanding visual task in ice hockey is to see and locate the fast moving puck from the maximum distance, against a background of ice. After the ice has been in use for a short time, it is covered

with fine particles of ice (ice-granulate) and can then be regarded as a diffuse reflector. Visibility is improved appreciably if the rink luminance is raised, thus giving better contrast. The background against which the game is viewed, should also be free of strong patterns and sudden changes in luminance. In order to avoid a large difference in brightness between the field of play and its surroundings, which can lead to visual fatigue as a result of the need for continuous adaptation, the spectator area should be illuminated to at least $1/3$ of the average illuminance over the sports area (see also 2.5). This is also important for television broadcasting and filming.

If figure skating is to be enjoyed by the spectators and marked accurately by the judges it is necessary for them to observe details of foot work and hand movement which can be very fast and involve small detail. This represents a visual task as exacting as that for ice hockey, but speed skating, although fast, does not demand the observation of such small detail. Still lower lighting values are acceptable for curling but the 'houses' at the ends of the rink require a higher illuminance than the area between the 'hog-lines'. Recreational skating, being a participant sport with no significant spectator interest,