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Public swimming pools - Computer vision systems for the detection of drowning accidents in swimming pools - Safety requirements and test methods (ISO 20380:2017)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Public swimming pools - Computer vision systems for the detection of drowning accidents in swimming pools - Safety requirements and test methods (ISO 20380:2017)

Piscines publiques - Systèmes de vision par ordinateur pour la détection de noyades en piscines - Exigences de sécurité et méthodes d'essai (ISO 20380:2017)

Öffentliche Schwimmbäder - Computererkennungssysteme für das Erkennen von Ertrinkungsunfällen in Schwimmbädern - Sicherheitstechnische Anforderungen und Prüfverfahren (ISO 20380:2017)

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European foreword

This document (EN ISO 20380:2017) has been prepared by Technical Committee ISO/TC 83 "Sports and other recreational facilities and equipment" in collaboration with Technical Committee CEN/TC 136 "Sports, playground and other recreational facilities and equipment" the secretariat of which is held by DIN.

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INTERNATIONAL STANDARD

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Public swimming pools — Computer vision systems for the detection of drowning accidents in swimming pools — Safety requirements and test methods

Piscines publiques — Systèmes de vision par ordinateur pour la détection de noyades en piscines — Exigences de sécurité et méthodes d'essai



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ISO 20380:2017(E)**Foreword**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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This document was prepared by Technical Committee ISO/TC 83, *Sports and other recreational facilities and equipment*.

Introduction

Currently available epidemiological data show that despite the presence of lifeguards, drowning [which, according to the World Health Organization (WHO), is the process of experiencing respiratory impairment from submersion/immersion in liquid] remains in public swimming pools with entrance fees. A certain number of studies^{[2][11]} together demonstrate that for several reasons (physiological, cognitive, architectural, organizational, etc.), lifeguards may sometimes find themselves in difficulty when watching over swimmers, knowing that a potential risk of a drowning accident may occur.

It is important to bear in mind that a lifeguard can supervise and inform swimmers to help ensure their safety as well as anticipate and intervene early to prevent an accident from occurring.

Computer vision systems do not save people from drowning, as saving a drowning person necessarily requires human intervention.

Installation and use of computer vision systems cannot serve as a reason to reduce human monitoring of swimming pools, unless a robust risk assessment does indicate this is possible without compromising safety, with reference to applicable national regulations, if any.

In addition to the safety organization, these tools are solely for use by a competent person, who received prior training in the operational performances of these systems in accordance with the manufacturers' and the swimming pool operators' instructions.

Not all possible drowning accidents can be detected by the systems described in this document, e.g. persons floating on or just below the water surface. Although the current state-of-the-art does not allow 100 % effectiveness, for several years, these technologies have proved their worth worldwide, by regularly helping lifeguards to identify potential drowning accidents that they had not observed.

While it is possible to retrofit this type of equipment to an existing pool, consideration of its introduction is best at the pool design stage.

In order to really enhance the drowning prevention in swimming pools, computer vision systems are designed to:

- scan continuously and with redundancy the pool basin;
- detect mathematically a solid mass, without trajectory, lying at the pool basin bottom;
- trigger electronically an alarm after the detection;
- limit false alarms by automatically differentiating a solid mass from light and shadow projections on the texture of the pool basin and by discriminating, without human intervention, a motionless solid mass above and below the water surface.

A trained competent person cannot completely rely on such a system because:

- the system has limitations, which are covered in training for using the system;
- the system's performance can be compromised by various factors, which the trained competent person would be informed of automatically in real time.

Computer vision systems are foreseen to support the competent person in detecting drowning accidents at the pool basin bottom and reacting faster by saving precious seconds.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning computer vision technologies for the detection of drowning accidents in swimming pools, given in [3.1](#).

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Public swimming pools — Computer vision systems for the detection of drowning accidents in swimming pools — Safety requirements and test methods

1 Scope

This document describes the minimum operational, performance and safety requirements and test methods for computer vision systems used to detect drowning accidents.

This document does not apply to the systems used in domestic swimming pools and pool basins with a surface area of less than 150 m².

2 Normative references

There are no normative references in this document.

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