# SLOVENSKI STANDARD
# SIST EN ISO 20380:2018

**01-februar-2018**

**Javna kopališča - Računalniški sistemi za odkrivanje primerov utopitve v bazenih kopališč - Varnostne zahteve in preskusne metode (ISO 20380:2017)**

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

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

**Ta slovenski standard je istoveten z:** **EN ISO 20380:2017**

**ICS:**

| | | |
|---|---|---|
| 35.240.99 | Uporabniške rešitve IT na drugih področjih | IT applications in other fields |
| 97.220.10 | Športni objekti | Sports facilities |

**SIST EN ISO 20380:2018** **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

**EN ISO 20380**

December 2017

ICS 35.240.99; 97.220.10

English Version

# 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)

This European Standard was approved by CEN on 9 October 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

Ref. No. EN ISO 20380:2017 E

EN ISO 20380:2017 (E)

# Contents

iTeh STANDARD PREVIEW
(standards.iteh.ai)

## 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.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2018, and conflicting national standards shall be withdrawn at the latest by June 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

iTeh STANDARD PREVIEW

(standards.iteh.ai)

The text of ISO 20380:2017 has been approved by CEN as EN ISO 20380:2017 without any modification.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

# INTERNATIONAL STANDARD

# ISO 20380

First edition
2017-11

# 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*

© ISO 2017

ISO 20380:2017(E)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

**COPYRIGHT PROTECTED DOCUMENT**

# Contents

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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.

ISO takes no position concerning the evidence, validity and scope of these patent rights.

The holder of these patent rights has assured ISO that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this