



SLOVENSKI STANDARD

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Namakalna tehnika - Avtomatski namakalniki za trate - 1. del: Opis uporabnikovih nastavitev

Irrigation techniques - Automatic turf irrigation systems - Part 1: Definition of the programme of equipment by the owner

Bewässerungstechniken - Automatische Rasenbewässerungssysteme - Teil 1: Festlegung der Aufgaben und Ausrüstungen durch den Eigentümer

Techniques d'irrigation - Installations avec arrosage automatique intégré des espaces verts - Partie 1: Définition du programme d'équipement par le maître d'ouvrage

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ICS:

65.060.35	Namakalna in drenažna oprema	Irrigation and drainage equipment
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12484-1

January 1999

ICS 65.060.35

Descriptors: irrigation, open spaces, automatic systems, installation, automatic control, specifications

English version

Irrigation techniques - Automatic turf irrigation systems - Part 1: Definition of the programme of equipment by the owner

Techniques d'irrigation - Installations avec arrosage
automatique intégré des espaces verts - Partie 1: Définition
du programme d'équipement par le maître d'ouvrage

Bewässerungstechniken - Automatische
Rasenbewässerungssysteme - Teil 1: Festlegung der
Aufgaben und Ausrüstungen durch den Eigentümer

This European Standard was approved by CEN on 4 December 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 334 "Irrigation techniques", the secretariat of which is held by AFNOR.

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 July 1999, and conflicting national standards shall be withdrawn at the latest by July 1999.

Other parts of this standard are :

- | | |
|------------|---|
| EN 12484-2 | Irrigation techniques - Automatic turf irrigation systems - Part 2 : Design and definition of typical technical templates |
| EN 12484-3 | Irrigation techniques - Automatic turf irrigation systems - Part 3 : Automatic control and system management |
| EN 12484-4 | Irrigation techniques - Automatic turf irrigation systems - Part 4 : Installation, acceptance and safety |
| EN 12484-5 | Irrigation techniques - Automatic turf irrigation systems - Part 5 : Testing methods of systems |

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This part of EN 12484 specifies the data, irrigation needs, constraints and requirements which have to be presented and quantified by the owner in order to initiate system design, equipment sizing and realisation of automatic turf irrigation system.

This part of EN 12484 is applicable to irrigation projects with a surface larger than 1 ha such as golf courses, race courses, large municipal parks and sports fields. This part of EN 12484 may not be applicable to residential applications equal or smaller than 1 ha for which the home owner could not provide all the data listed hereafter.

Appendices A and B are informative and give the type of controls which can be used as a guideline for defining data, needs, constraints and requirements.

2 Definitions

For the purpose of this standard the following definitions apply :

2.1 owner : Individual or legal entity described by this term in the contract documents on whose behalf the work or works are performed.

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2.2 project manager : Individual or legal entity to whom, because of his proficiency, the owner entrusts the task of designing the project, directing the performance of the contract and proposing the acceptance of and the settlement for the work.

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2.3 rain fall supply : The amount of water which falls on a unit of horizontal surface in a given unit of time as natural and/or artificial rain (in mm/h).

2.4 flow rate : The volume of water which flows past a particular cross section in a unit of time (in l/s or in m³/h).

2.5 evapotranspiration : Quantity of water transferred from the soil to the atmosphere by evaporation and plant transpiration. It is measured in mm/h or mm/day.

2.5.1 potential evapotranspiration (ETP or ET) : Maximum quantity of water capable of being evaporated in a given climate, by a continuous expanse of vegetation covering the whole ground and well supplied with water. It includes evaporation from the soil and transpiration from the vegetation in a specific region during a 24 h period, expressed as a depth of water.

2.5.2 maximum evapotranspiration (ETM) : Maximum quantity of water capable of being evapotranspired in a given climate by a given crop will supplied with water.

2.6 crop coefficients (k_c) : Factors correcting the evapotranspiration ratio according to the plant and its growing stage.

2.7 granulometry of a soil : Distribution by size of the particles of a soil.

2.8 relative humidity : Expressed as a percentage representing the ratio of the water vapour present in the air to the vapour which the same air could contain if saturated.

2.9 dynamic pressure : Pressure exerted by a liquid moving along the walls of a pipe or at the nozzle of a sprinkler. It is measured in Pascal (Pa)¹⁾. This is the reference pressure used for sizing the network.

2.10 soil moisture reservoir : Amount of water that may be available in the soil (in mm/cm).

2.11 available moisture reservoir of the soil : Amount of water that may be available in the soil and can be taken up by plants (in mm/cm).

2.12 soil structure : The arrangement of particles into aggregates which occur in a variety of recognised shapes and sizes.

2.13 texture : Characteristics of a soil resulting from the size and nature of its components.

2.14 flow velocity : Vector indicating the speed and direction of a moving liquid. Commonly used for mean velocity (m/s).

2.15 infiltration rate : Rate at which a given soil absorbs water per unit area (mm/h).

2.16 wind speed : Speed of air movement at 2 m above the ground surface in unobstructed surroundings (in m/s).

3 Units

- a) area : hectare (ha) ;
- b) soil water reservoir : in mm of water per cm of soil (mm/cm) ;
- c) infiltration rate of water into the soil : mm/h ;
- d) dimensions of components and pipe diameters : mm ;
- e) water velocity : m/s ;
- f) wind speed : m/s ;

¹⁾ 1 bar = 10⁵ Pa = 100 KPa

- g) flow rate : l/s, m³/h ;
- h) pressure : Kilopascal (KPa)¹⁾ ;
- i) power : KW.

For all other units, S.I. system shall be used.

4 Owner's definitions concerning the equipment programme

This chapter specifies the data that the owner shall gather for the knowledge of the site to be irrigated.

4.1 Location

The owner shall provide :

- a) latitude (in degree), longitude (in degree) and altitude (in meter) of the site ;
- b) the identification of the area concerned by the irrigation system ;
- c) the updated general plan : it should be marked in a metric and standard scale selected to provide a good legibility. It should use the 1/100, 1/200, 1/500, 1/1000, 1/2000, 1/2500, scale according to the area to be equipped, with the following information :
 - 1) contour level every 5 m with indication of the benchmark ;
 - 2) property and project boundaries ;
 - 3) networks and services existing and planned ;
 - 4) buildings existing and planned ;
 - 5) water sources with indication of available flow and pressure ;
 - 6) average ground water level ;
 - 7) electrical power supply points with specification of voltage and available capacity ;
- d) the landscape layout plan of the area to be equipped with mention of :
 - 1) types of vegetation existing and planned ;
 - 2) types of soils ;
 - 3) roads and pavements existing and planned ;
 - 4) other obstacles ;

¹⁾ 1 bar = 10⁵ Pa = 100 KPa

- 5) presence of rocks and stones ;
 - 6) pipe conduits and planned conduits ;
 - 7) area not to be watered ;
- e) and more generally all the constraints and obligations to which the owner is subjected (for example archaeological site).

4.2 Water resources

4.2.1 Characteristics

The owner shall indicate the origin of the water resource(s) :

- a) potable water network ;
- b) irrigation water : pressurized network or free surface ;
- c) untreated industrial water, recycled water ;
- d) individual supply from river, bore hole, well, lake, small dam, reservoir, etc.

The owner shall also indicate the characteristics and water analysis results (physical, chemical and bacteriological properties) of the water resource.

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4.2.2 Availability of water

4.2.2.1 Water supply already installed

The owner shall specify for each installed water supply point :

- a) total volume of water available on yearly basis ;
- b) total volume of water available on irrigation season basis ;
- c) available flow rate ;
- d) available pressure ;
- e) daily and seasonal water availability schedule.

4.2.2.2 Legal authorizations

Many authorities and organisms are involved in the use of water resources. It is the responsibility of the owner to contact all the parties involved and to obtain a permit for abstraction of sufficient water quantity for the planned project