



SLOVENSKI STANDARD

oSIST prEN ISO 24194:2025

01-julij-2025

Sončna energija - Polja sprejemnikov sončne energije - Preverjanje zmogljivosti (ISO/DIS 24194:2025)

Solar energy - Collector fields - Check of performance (ISO/DIS 24194:2025)

Sonnenenergie - Kollektorfelder - Überprüfung der Leistungsfähigkeit (ISO/DIS 24194:2025)

Energie solaire - Champs de capteurs - Vérification de la performance (ISO/DIS 24194:2025)

Ta slovenski standard je istoveten z: prEN ISO 24194

<https://standards.iteh.ai/catalog/standards/sist/a9f50e59-ab62-47f8-af13-8e83713b4245/osist-pren-iso-24194-2025>

ICS:

27.160

Sončna energija

Solar energy engineering

oSIST prEN ISO 24194:2025

en,fr,de



DRAFT International Standard

ISO/DIS 24194

Solar energy — Collector fields — Check of performance

*Energie solaire — Champs de capteurs — Vérification de la
performance*

ICS: 27.160

ISO/TC 180/SC 4

Secretariat: **SAC**

Voting begins on:
2025-05-14

Voting terminates on:
2025-08-06

<https://standards.iteh.ai/catalog/standards/sist/a9f50e59-ab62-47f8-af13-8e83713b4245/osist-pren-iso-24194-2025>

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 24194:2025(en)

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENTS AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

© ISO 2025

ISO/DIS 24194:2025(en)

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[oSIST prEN ISO 24194:2025](https://standards.iteh.ai/catalog/standards/sist/a9f50e59-ab62-47f8-af13-8e83713b4245/osist-pren-iso-24194-2025)

<https://standards.iteh.ai/catalog/standards/sist/a9f50e59-ab62-47f8-af13-8e83713b4245/osist-pren-iso-24194-2025>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

ISO/DIS 24194:2025(en)

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	2
5 General	5
5.1 Validity	5
5.2 Methodology and operating conditions	6
5.3 Source of input information	6
5.4 Application	6
6 Procedure for checking the power performance of solar thermal collector fields – Power Check	7
6.1 Stating an estimate for the thermal power output of a collector field	7
6.2 Calculating estimated power output	7
6.2.1 General	7
6.2.2 General Formula (1) for power estimate – using beam and diffuse irradiance	8
6.2.3 Simplified Formula (2) – using hemispherical irradiance	8
6.3 Restrictions on operating conditions	8
6.4 Shadows	9
6.4.1 Shading from the surroundings	9
6.4.2 General shadow impact of collectors on each other	9
6.4.3 Shadows on fixed collectors in rows	10
6.4.4 Shadows on one-axis tracking collectors in row	10
6.5 Collector incidence angle	13
6.6 Stagnation and periods of deliberately reduced performance	13
6.7 Unmodeled Effects	13
6.8 Example of setting up an equation for calculating performance estimate	14
6.9 Determination of potential valid periods	15
6.10 Checking collector field power performance	15
7 Procedure for checking the daily yield of solar thermal collector fields – Daily Yield Check	17
7.1 Stating an estimate for the daily yield of a collector field	17
7.2 Calculating daily energy yield	17
7.2.1 General	17
7.2.2 Formula (19) for daily yield estimate	17
7.3 Restrictions on operating conditions	18
7.4 Shadows	19
7.5 Collector incidence angle	19
7.6 Example of setting up an equation for calculating performance estimate	19
7.7 Determination of potential valid periods	21
7.8 Checking collector field daily yield performance	21
8 Procedure for checking the annual yield of solar thermal collector fields – Annual Yield Check	23
8.1 Stating an estimate for the annual yield of a collector field	23
8.2 Calculating annual energy yield	23
8.2.1 General	23
8.2.2 General Formula (27) for liquid heating collectors	27
8.3 Restrictions on operating conditions	31
8.4 Shadows	32
8.4.1 Shading from the surroundings	32
8.4.2 General shadow impact of collectors on each other	32

ISO/DIS 24194:2025(en)

8.5	Switch-off times and power reducing control strategies – planned and unplanned.....	32
8.6	Example of setting up an equation for calculating performance estimate.....	33
8.7	Determination of potential valid periods.....	33
8.8	Checking collector field annual yield performance.....	33
9	Measurements needed.....	35
9.1	General.....	35
9.2	Requirements on measurements, sensors and data.....	37
9.2.1	Accuracy.....	37
9.2.2	Time.....	37
9.2.3	Solar radiation measurement and satellite data.....	38
9.2.4	Temperature measurements.....	40
9.2.5	Flow rate measurement.....	41
9.2.6	Power measurement/calculation.....	41
9.2.7	Measurement of wind speed.....	42
9.3	Valid data records.....	42
Annex A (informative) Recommended reporting format — Power Check.....		43
Annex B (informative) Recommended reporting format — Daily Yield Check.....		45
Annex C (informative) Recommended reporting format — Annual Yield Check.....		46
Bibliography.....		48

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[oSIST prEN ISO 24194:2025](https://standards.iteh.ai/catalog/standards/sist/a9f50e59-ab62-47f8-af13-8e83713b4245/osist-pren-iso-24194-2025)

<https://standards.iteh.ai/catalog/standards/sist/a9f50e59-ab62-47f8-af13-8e83713b4245/osist-pren-iso-24194-2025>

ISO/DIS 24194:2025(en)

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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 180, *Solar energy*, Subcommittee SC 4, *Systems - Thermal performance, reliability and durability*.

This second edition cancels and replaces the first edition ISO 24194:2022 and the amendment ISO 24194:2022/Amd 1:2024 as it has been revised and extended.

This edition includes the following significant changes compared with the previous edition:

- Introduction: Information and explanations on how large-scale solar installations behave with regard to climate change and other environmental aspects.
- Scope: The scope has been specified to liquid heating collectors
- Chapter 5: General chapter added with validity of all 3 procedures was summarized in one general chapter instead of being repeated for every procedure separately, Methodology and operating conditions are explained, source of input information is described and possible applications are mentioned
- Chapter 6: Wrong formula for beam irradiance has been deleted and only one general formula according to ISO 9806 for liquid heating collectors introduced using beam and diffuse irradiance, which can be simplified in special cases using only hemispherical irradiance. No general distinction between concentrating and non concentrating collectors. Example is now given with calculation and result.
- Chapter 7: Daily yield method has been generalized so that is applicable for all collectors in the scope. Example is now given with calculation and result.
- Chapter 8: New method for annual yield has been added applicable for all collectors in the scope. Example is given with calculation and result.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.