SOLPLAN

FOUNDATION ANALYSIS SOFTWARE

SLOPE STABILITY ANALYSIS · LIMIT EQUILIBRIUM

Solstability

Release Notes

Scope, requirements and known limitations of release 1.0.1.

Release **1.0.1** · Document **SPL-SS-004** · Revision **A**

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Solstability — Release Notes	**SPL-SS-004**	**A**	**2026-11-13**
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Document control

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Revision history

Rev.	Date	Description
A	2026-11-13	First issue for Solstability 1.0.1.

Solstability documentation set

No.	Title	Content
SPL-SS-001	Solstability — End-User Licence Agreement	Terms under which Solstability is licensed to its users.
SPL-SS-002	Solstability — User Manual	Building, running and reporting slope stability analyses with Solstability.
SPL-SS-003	Solstability — Technical Reference	Limit equilibrium methods, slip surfaces and their search, water, loads, reinforcement and verification.
SPL-SS-004	Solstability — Release Notes	Scope, requirements and known limitations of release 1.0.1.
SPL-SS-005	Solstability — Third-Party Software Notices	Open-source components distributed with Solstability and their licences.

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1 About this release

Product	Solstability — slope stability analysis by limit equilibrium
Release	1.0.1
Release date	2026-11-13
Release type	Maintenance release with new features
Publisher	Solplan
Licence terms	End-User Licence Agreement SPL-SS-001 (free licence for every solplan.id account)

Solstability computes the factor of safety of soil and rock slopes, embankments, cuts and retaining structures by limit equilibrium. The sliding mass above a circular or polygonal slip surface is divided into slices, or into blocks for the Sarma method, and the equilibrium of the mass is solved with the selected method. The critical slip surface is found by optimization, by a grid of circles or by random generation of trial surfaces. Water, loads, earthquake, anchors, nails, geotextiles and stabilizing piles are included in the equilibrium. This document summarises what the release contains, what it needs to run, and the limits that users should know before relying on its results.

2 Capabilities

Table 2.1 — Capabilities of release 1.0.1

Area	Content
Geometry	Soil layers of given thickness below the model top; interface polygons above or cut into the layers for slopes, embankments and excavations; rigid bodies of very high strength that the circular search avoids; construction stages with embankments and earth cuts; templates of common slopes; import and export of interfaces as DXF, LandXML and IFC; a background drawing from DXF; a three-dimensional view of the model.
Soils	Unit weight above and below water, effective stress (c′, φ′) or total stress (c_u) analysis, uplift pressure from the saturated unit weight or from the porosity, a coefficient r_u per soil, anisotropy of strength along a foliation, incompressible subsoil.
Water	No water, ground water table, coefficient r_u, rapid drawdown, ground water table with a suction surface, and pore pressure isolines; water above the ground surface acts as a load.
Loads	Strip, trapezoidal, concentrated and line surcharges on the terrain or at a given elevation, permanent, variable or accidental; earthquake by horizontal and vertical coefficients or by the seismic standards GB 50111-2006, NB 35047-2015, GB 50330-2013 and JTG B02-2013; a tensile crack with or without water.
Reinforcement	Anchors (free and root length, prestress, spacing), soil nails (pull-out from input, bond, bond of soil, effective stress or HA 68/94; bar strength; head resistance), geotextiles (pull-out input, calculated or from the anchorage length) and stabilizing piles (shear resistance perpendicular to the pile or parallel to the slip surface, from input or imported from the shear demand of a single-pile analysis).
Methods	Bishop, Fellenius / Petterson, Spencer, Janbu, Morgenstern-Price (seven interslice functions), Shahunyants, ITFM (implicit and explicit) and Sarma; all methods can be compared on one slip surface.
Slip surfaces and search	Circular or polygonal slip surfaces; standard analysis of a given surface; optimization of a circle or of a polygon with fixed points and restrictions; grid search of circles; random search of circles built of chords, irregular surfaces and sliding blocks with Rankine active and passive wedges, with depth limit and restrictions that deflect the trial surfaces up or down; the search is shown as it proceeds, and trial surfaces are drawn coloured by their factor of safety.

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Area	Content
Verification	Factor of safety against a required value per design situation (permanent, transient, accidental, seismic); limit states; EN 1997 design approaches 1, 2 and 3; LRFD 2012 (Service I, Extreme I); Chinese standards; the surplus sliding force for the design factor of safety.
Results	Factor of safety and verification on the canvas, slice table, interslice forces, moments, anchor, nail, geotextile and pile forces, grid and random search tables; export of all tables to Excel and CSV; report in PDF, Word, Excel and HTML with the selected inputs, tables and pictures.
Automation	Command line with project commands, batch analysis of several project files, and an MCP server for use from AI assistants; SI or US units.

3 System requirements

Table 3.1 — System requirements

Item	Minimum	Recommended
Operating system	Windows 10, 64-bit	Windows 11, 64-bit
Processor	x86-64, 2 cores	4 cores or more
Memory	4 GB	8 GB or more
Disk space	1 GB for the program and its libraries	2 GB
Display	1280 × 720 pixels	1920 × 1080 pixels or more
Network	Required while Solstability is in use, for licence validation (EULA SPL-SS-001). A licence can be borrowed for use without a connection for up to 30 days.	
Office software	Optional; only to open exported Word and Excel reports	

4 Installation and upgrade

1. Run Solstability-1.0.1-Setup.exe and accept the End-User Licence Agreement. Setup needs administrator rights and installs into C:\Program Files\Solplan\Solstability.
2. Start Solstability from the Start menu (**Solplan ▸ Solstability**) or by double-clicking a project file.
3. When Solstability starts, sign in with your solplan.id account, with its e-mail address and password or with Google. Every account receives a free Solstability licence at its first sign-in; no purchase or trial is needed.

An upgrade is installed over the previous release with the new Setup; uninstall from Windows **Settings ▸ Apps** or from the Start menu. Project files (.sstab) and user settings are kept in both cases.

5 Files and compatibility

Table 5.1 — Files used by Solstability

File or folder	Content
`*.sstab`	Project file. JSON text, UTF-8, at most 20 MB. Saved atomically: a failed save does not damage the previous file.
`*.dxf, *.xml, *.ifc`	Interfaces exported for CAD and BIM programs; DXF and LandXML files can also be imported as interfaces or as a background drawing.
`%APPDATA%\Geostruktur\Solstability`	User settings, the licence sign-in (encrypted for the Windows user) and the log folder logs.

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6 What is new in 1.0.1

Table 6.1 — New and changed in release 1.0.1

Area	Change
Reinforcement forces on the drawing	After an analysis every anchor, nail and geotextile is drawn with the axial force along its length, and every stabilizing pile with its shear, with the value where the slip surface crosses it; that value is the force used by the analysis and listed in Reinforcement forces. The diagrams are switched on and off with View ▸ Reinforcement Forces; their style is chosen in View ▸ Drawing Settings.
Drawing a circle	With object snapping off, the two points of Draw circle on the ground surface fall on the 0.1 grid like every other drawn point, so a circle drawn from the same clicks is the same at any zoom.
Drawing	The drawing is fitted to the window again when the model limits or the base layers change in Soil Layers; the menus show their icon strip; the search animation no longer stops when the drawing is redrawn while it runs.
User Manual	Six new examples, one treatment each: an anchored cut, a soil nail wall, a basal geotextile under an embankment on soft clay, a retaining wall on spun piles, a counterweight berm in a second stage, and a retaining wall on a spread footing. The optimization in the examples is repeated from the last critical circle until the circle no longer moves.

Version 1.0.0 was the first release of Solstability.

7 Changes to computed results

None: the same input gives the same factor of safety as in 1.0.0. Only a circle drawn with object snapping off can now start at a slightly different position, rounded to the 0.1 grid, and an optimization started from it may end at a different local minimum.

8 Known limitations

The limitations below are inherent in the methods or in the scope of this release. They are also described in the User Manual (SPL-SS-002) and the Technical Reference (SPL-SS-003).

Table 8.1 — Known limitations

No.	Topic	Limitation
1	Limit equilibrium	The factor of safety is the ratio of available to mobilised shear strength along an assumed slip surface. Deformations, progressive failure and the stress–strain behaviour of the soil are not modelled; each method rests on its own assumptions about the interslice forces.
2	Two dimensions	The analysis is plane strain, per metre of slope. Elements with a spacing (anchors, nails, piles) are smeared over their spacing; the three-dimensional view only displays the model.
3	Search	Optimization, grid and random search find the most critical surface among those they examine. A different start, grid or range can find a lower factor of safety; the search ranges remain an engineering decision.
4	Earthquake	Earthquake loading is pseudo-static. Dynamic response, liquefaction and permanent displacement are not computed.
5	Interface language	The user interface and the reports are in English.

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9 Documentation

Table 9.1 — Documentation of this release

No.	Title	Use
SPL-SS-001	End-User Licence Agreement	Terms of use, free licence and session rules
SPL-SS-002	User Manual	How to build, run, check and report an analysis; examples
SPL-SS-003	Technical Reference	Methods, slip surfaces and search, water, loads, reinforcement, verification
SPL-SS-004	Release Notes	This document
SPL-SS-005	Third-Party Software Notices	Open-source components and their licences

The documents are installed in the docs folder of the installation.

10 Support

Questions and problem reports are handled by support@solplan.id. A problem report should include the release number (**Help ▸ About Solstability**), the project file, a description of the steps that lead to the problem, and the log file from %APPDATA%\Geostruktur\Solstability\logs.

END OF DOCUMENT

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