MIKE Powered by DHI

Release Notes 2025

FEFLOW

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Introduction

Welcome to FEFLOW 10.0 within MIKE 2025.

FEFLOW is the groundwater and subsurface finite-element simulation. FEFLOW provides best-in-class technology for groundwater flow, contaminant, groundwater age and heat-transport simulations. With its efficient user interface and its yet unmatched range of functionality, FEFLOW has become a standard in premium groundwater modelling over the last 35 years.

Groundwater and subsurface modelling projects are becoming more and more demanding - requiring modelling software with more sophisticated capabilities than ever before. In this Release Note, you will find information about new features of FEFLOW, and what you need to know to install and get started.

MIKE 2025 comes with a major FEFLOW 10.0 release. The release brings multiple new features and software capabilities from numerical calculations, usability and mesh operations. The new implicit modelling workflow allows you to effortlessly construct geologically meaningful surfaces and structural models from observations like boreholes and stratigraphy, with a toolbar for streamlined digitisation, importing/exporting, data management, and more. FEFLOW 10.0 brings the concept of coordinate-aware mapping with reference projections, seamless on-the-fly reprojection, and multiple "online background maps" styles to enhance model visualisation. With the extended Equation of State (EOS), FEFLOW computes directly the density and viscosity values as primary process variables. Moreover, the density can dependent non-linearly on concentration, temperature and pressure. This extends the range of problems for applications involving temperature up to 350 °C and fluid pressure up to 100 MPa. The streamlined Transport Formulation simplifies the transport modelling with FEFLOW 10's extended "Convective Form," which supports total mass/heat flux across boundary conditions. The 3D Supermesh concept is extended to a new geological-meaningful data structure with the benefits of a high-performing operation. Geode-FEFLOW Tools bring an improved algorithm with the latest technological changes in mesh operations. The improved FEFLOW-Python Programming Interface is capable to build and customise 3D Supermesh models directly from Python with several new APIs that streamline access to the latest features including surface repair, remeshing, volumetric meshing, and implicit modelling, powered by Geode. FEFLOW 10 offers an updated Surface Water and Groundwater Coupling, which allows you to analyse river networks and their interaction with surrounding groundwater systems by coupling FEFLOW with MIKE 1D.

System requirements

Operating systems

Fully supported Windows operating systems *	Windows 11 Pro, version 24H2 (64 bit) Windows 11 Pro, version 23H2 (64 bit) Windows 10 Pro, version 22H2 (64 bit) Windows Server 2022 Standard 22H2 (64 bit)

Fully supported Linux operating systems *	Ubuntu 20.04 LTS Ubuntu 22.04 LTS Ubuntu 24.04 LTS
Non-supported but partially tested operating systems **	Windows Server 2019 Standard, version 1809***

*   Fully supported operating systems are systems that have been tested in accordance with MIKE's Quality Assurance procedures and where warranty and software maintenance agreement conditions apply.

** Non-supported but partially tested operating systems are systems, which are not officially supported by the MIKE software products. These operating systems have only undergone very limited testing for the purpose of MIKE software, but the software and key features are likely to work. Installation of MIKE software on a non-supported operating system is done so at the user's own risk. The MIKE software warranty and software maintenance agreement conditions do not apply for unsupported operating systems and DHI is under no obligation to provide assistance or troubleshooting for cases where the software is being used on a non-supported operating system.

*** MIKE Cloud login is not supported on Windows Server operating systems.

Please note that when running a fully supported operating system as a 'guest operating system' on a virtualization platform, it is automatically downgraded to a non-supported operating system under the conditions provided above.

Minimum hardware/software requirements

Processor	compatible with x64 instruction set, 2.2 GHz or higher
Memory (RAM)	4 GB or higher *
Storage	64 GB or higher *
Display	resolution 1024 x 720 (High-Definition) or higher, 24-bit color (true color)
Graphics adapter	≥ 2 GB memory, ≥ 24-bit color, Shader version ≥ 1.30, minimum hardware accelerated OpenGL ≥ 2.0 / recommended hardware accelerated OpenGL ≥ 3.0 with fully supported Windows drivers
Software requirements	Microsoft .NET Framework 6.0 or later **

*   The actual required amount of memory and disk space depend on the usage (application, model setup, size of data files etc.)

**   This is required for the surface water and groundwater coupling using MIKE 1d and FEFLOW engines. FEFLOW's Cloud Simulation panel (required for MIKE Cloud Execution) uses a self-contained .NET installation provided with the FEFLOW's installer.

Installation

To install FEFLOW, please go to the 'windows' folder inside the 'FEFLOW' product folder and execute the 'start.exe' file either on the MIKE 2025 USB or from the downloaded, un-zipped installation files. Press the 'Install' button to begin installation.

To start the FEFLOW installation, please click on 'FEFLOW Program Files'. It is recommended to allow the setup program to check for the latest patch on the MIKE Powered by DHI website to avoid any known and already fixed bugs.

All necessary FEFLOW files and folders will be installed on your PC. Additionally, a FEFLOW entry in the Start menu is created, containing links to FEFLOW itself and some supporting programs.

License file and dongle

Please Note that when using the local or network license option, which require a license file and a dongle, then

- the DHI License Manager must installed separately.
- all licensed applications included in MIKE 2025 require a 2025 version of the DHI License Manager.
- a new license file format (file extension dhilic2) has been introduced with MIKE 2022 and these license files can only be used together with a DHI License Manager 2022 or newer.

To use FEFLOW software in licensed mode, please refer to the DHI License Manager Release Notes. (License Manager Release Notes).

Product invocation

To start FEFLOW, double click on the FEFLOW 10.0 icon on your desktop or launch FEFLOW from the Windows Start menu and select the program you would like to start. Typically, this will be 'FEFLOW 10.0 Standard' or the free viewer 'FEFLOW 10.0 Viewer'.

Starting FEFLOW without a valid license, it is recommended to switch to demo mode via Tools - License Setup in the main menu. This mode is indicated by the word 'DEMO' in the header of the FEFLOW application window. Running in demo mode, file loading and saving is limited to 2500 nodes.

Support

For general support, please refer to our Customer Care Portal.

If you experience any difficulties, or if you have questions, please contact our Customer Care team at mike@dhigroup.com.

You can also contact your local Customer Care team for support in your local language. A list can be accessed from here.

New features and fixed issues

Every new release of FEFLOW consists of new modules, new features and/or corrections to problems or significant inconsistencies discovered in previous releases. Please find below short descriptions of the most significant news.

Release 2025 (FEFLOW 10.0)

New features

Module/type	New feature
FEFLOW / Numeric	FEFLOW has a new Equation of State (EOS) section under the Problem Settings dialog. Here the user can control all relevant information for defining the fluid density and fluid viscosity. The extended EOS in FEFLOW 10 considers now non-linear changes of density dependent on concentration, temperature and pressure.

FEFLOW / Numeric	The Convective Form of the Transport Equation (CFTE) considers now that the Mass and Heat Boundary Conditions of 2nd, 3rd and 4th kind by default allow a total flux. This new implementation becomes the default formulation. If needed, the user can still access to the former Divergence Form of the Transport Equation (DFTE) by the legacy settings section under Problem Settings – Transport Settings. The budgets under the extended CFTE now reports the way the DFTE does. Neuman and Cauchy Boundary Conditions in the Rate / Period panels are renamed to Flux and Transfer BC, respectively for consistency on the terminology.
FEFLOW / 3D Supermesh	A new data structure (binary-fast file format *.smh3d) is introduced and will be the future replacement of *.smhx file format. The new data structure follows a much geological-meaningful concept. This includes the concept of blocks as Supermesh elements and their corresponding association to surfaces, edges, etc. The Supermesh smh3d brings a major performance improvement in data handling at least x100 factor.
FEFLOW / 3D Supermesh	Geode-FEFLOW Tools are updated to version 5.x. This requires a FEFLOW Advanced license 3.0x. Geode's implementation supports only the new data structure (i.e., *.smh3d file format). The improved algorithm introduces additional robustness to the surface repair, surface remesh and volumetric mesh methods. The volumetric mesh generation includes an on-the-fly mesh optimization based on tetrahedral aspect ratio.
FEFLOW / 3D Supermesh	New Implicit Modelling workflow allows you to effortlessly construct geologically meaningful surfaces and structural models from observations like boreholes and stratigraphy. The new toolbar "Implicit Modelling" provides a streamlined digitisation and importing/exporting of borehole (drillholes) observations. The stratigraphic pile is linked to the FEFLOW's Lookup materials and decides the meaningful creation of the structural geology.
FEFLOW / Numeric	The Well BC constrained by a Minimum Hydraulic-Head constraint includes now a second constraint verification. In cases where the Well BC has outflowing conditions imposed AND if the head constraint triggers inflowing conditions (e.g. due to another Hydraulic-Head BC at the nearby locations), the flow through the boundary condition is cancelled out. This new implementation eliminates unwanted infiltration.
FEFLOW / Numeric	The new auxiliary parameter "Temperature relative to boiling" computes the pressure-dependent boiling point and informs the user about a possible phase change at given model location.
FEFLOW / Usability	FEFLOW introduces a map reference projection for the FEM and Supermesh documents. The coordinate-awareness is used for on-the-fly re-projection of map files (e.g. imported map files with a different coordinate system) for visualization purposes.
FEFLOW / Usability	Under the Maps panel, if the FEFLOW project has a defined reference projection, now it is possible to load directly "Online Background maps". The online maps are retrieved on the fly according to the zoom level at the corresponding view (Slice, Supermesh and 3D Views). Multiple visualization styles are offered.
FEFLOW / Usability	Iso-features from Zero-Pressure, Concentration and any Process Variable can be now used as canvas to plot nodal and elemental parameters.
FEFLOW / Usability	Via the FEFLOW Observation Data dialogue, now it is possible to decide whether nodal selections used for computing Rate and Period charts should record the inflow, outflow or net quantities.
FEFLOW / Python	Several new FEFLOW-Python APIs to access, edit and manipulate the new 3D Supermesh data structure. Geode-FEFLOW methods such as surface repair, surface remesh, volumetric mesh and the new implicit modelling are accessible through Python. The reference coordinate system can be controlled with doc.set/get GeoCoordinateSystem() methods.

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FEFLOW / General	The programming framework (Qt) used for FEFLOW Graphical Interface and visualization has been updated.
FEFLOW / General	Several maintenance tasks were carried to improve user experience.