

QForm UK 12.0.6

25 September 2026

What's new

Results view window

- The options for altering the view cube size in the program settings have been expanded
- Improved the logic of the “Zoom out” command for scaling the view in the results viewing window
- Fixed the reset of object selection when clicking on empty space with the “Ctrl” key held down
- Fixed the reset of object selection when clicking on the view cube

Work with simulation objects

- Added the option to replace geometry of a clipping surface using the “Replace geometry” command
- “Springs between tools”: improved logic for object selection in the results viewing window, enhanced checks when starting the simulation
- Fixed an error where the tool axis was incorrectly calculated if it was first inherited from the previous operation and then its geometry was replaced

Section planes

- Improved algorithms for labeling “Field value at point” when working with cross cut planes
- Added rendering of the boundaries of active cross cut planes on the surfaces of objects

Images and animation saving

- Fixed memory leak during images and animations saving

Processes and operations

- Fixed the incorrect work of the “Process structure” button, displayed above the object tree in the results viewing window

Setting initial data

- Fixed the program shell crash when attempting to load a process template in the “Operation” tab
- Fixed some errors that led to the program shell crash when changing the source data in copied processes

Import and export

- Expanded capabilities for the export and import of calculated fields from *.csv3d-file
- Fixed an error of quad mesh import from *.csv2d-file that occurred in some cases
- Fixed an error that made it impossible to specify a symmetry plane in the interface for geometry loaded from a *.csv3d file
- Improved diagnostic when importing a 2D mesh from a *.unv-file

License

- Improved algorithms for checking the license

Special

- Improved the structure of data recorded on the hard drive when saving the modified project

API

- Improved section plane handling. Fixed bidirectional switching of the plane type, added the ``section_plane_mode_set`` function to change the type of an existing plane without recreating it, and extended ``section_plane_get`` to return the plane type and cut side. The behavior of the ``reverse_cut`` parameter in plane creation functions was also unified.
- Fixed an error in the new “Application Wizard” version where the list of functions in the ``Tracking points`` category differed from the previous version, with some functions displayed under other categories
- Fixed an error where the ``mesh_lap_points_get`` function returned duplicate points
- Fixed an error in the ``field_palette_set()`` function
- Fixed the incorrect work of the ``execute_tracking_advanced`` function
- Fixed an error in the new “Application Wizard” version where the function was not executed when clicking the triangular icon on the “Run” button
- Fixed an error in the function ``field_at_point()``, which caused the point in the workpiece to be considered outside the mesh boundaries

- Fixed an error in the API function for getting properties when working with the sprayers database tables

General simulation conditions and capabilities

- A warning has been added that the stress-strain state of the tool cannot be inherited from the previous operation, and the corresponding inherited calculated tool fields are reset
- Edited the “Tools simulation” window that appears when launching the simulation of the stress-strain state of tools for the active record in the post-processor: now the window dimensions automatically adjust to the count of tools, and the option to select all tools for simulation at once has been added
- For the operation type “Cooling/Heating”, the default simulation step parameters values have been optimized
- The algorithm for solving the contact task has been improved for projects with an assembled rotating tool
- Fixed the incorrect processor simulation of the “Gartfield” fields, specified in the “Simulation parameters” tab in the “Additional” section
- An error occurring in some cases during 3D simulation with a workpiece inherited from a 2D operation has been fixed

Boundary conditions

- Fixed the incorrect simulation of sprayer cooling with the limited minimum number of records in the “Simulation parameters”

Diagnostics

- Fixed an error that caused the simulation results of an operation to be deleted when executing the command “Restart from beginning” before user's confirmation

Simulation log

- Now the simulation log displays info that gravitational positioning specified in “Workpiece parameters” has been performed
- Fixed an error where the simulation status “Clipping” could be mistakenly displayed at the bottom of the program window in operations with no clipping defined

Databases

- Improved names and values of parameters for some tool materials designed for low-cycle fatigue simulation

- The database of sprayers has been expanded
- When the parameters of the environment are set with a table, it is clarified that one of the two possible arguments is the surface temperature of the object with which the environment interacts
- Fixed an error that caused the application to crash when importing an invalid Excel flow stress table. Added checks for inconsistent row counts, zero plastic strain values, and differences in plastic strain values between worksheets.
- Fixed the program shell crash when attempting to export an empty user's database. Also, a corresponding warning has been added

Subroutines

- Fixed an error occurring during the execution of some user's Lua subroutines with the feature "Execute in simulation process" enabled, in cases where elastic-plastic deformation of the workpiece was considered in the simulated operation

FE-Mesh

- Improved checks of user defined parameters in the "Restructure the edges" section in the tool mesh parameters
- Improved algorithms of generating a tool volume mesh

Sheet-bulk forming

- Improved some algorithms of the quad mesh generator
- Fixed the reset of the alternative object name when regenerating the quad mesh

Longitudinal rolling

- Fixed an error that prevented the array of cross cut planes from being constructed in projects simulated in some previous versions
- Fixed the error that led to the underestimation of the calculated power value
- Fixed an error where the log could mistakenly display the "Can't compute roll axis" message requiring the simulation to be restarted from the beginning, even when it had already been started from the beginning
- Fixed an error that prevented clipping of a workpiece in projects with two symmetry planes during the simulation of the operation type "Reverse rolling"
- Fixed an error where axes were not calculated for tools created as parametric geometry
- Fixed an error that prevented editing the actual length of the inherited workpiece in "Rolling parameters"
- Fixed an error where a 0.5 simulation step could appear at the beginning of the first operation, causing the simulation to start from the second operation

Cross rolling

- Diagnostic checks of the initial data have been added during the simulation start

Extrusion

- Improved measurements label visibility in “Deformed contour analysis tool”
- Added the option to change the position of linear and angular dimensions in the “Deformed contours analysis tool”
- Improved default profile positioning in “Deformed contours analysis tool”
- Added the option to move measurement labels in “Deformed contour analysis tool”
- Added possibility to assign tolerance range for measurements in settings of “Deformed contours analysis tool”
- Added the icon for “Deformed contours analysis tool” to the toolbar
- Fixed an error where the previously generated layer surface of the subroutines “Billet skin analysis” or “Back-end layer analysis” was not reset during recalculation of the operation with the corresponding results
- Program shell crash when switching to an uncalculated process with an open graph window for the workpiece has been fixed
- Fixed the bug where setting Velocity from the database would fail if the Velocity of ram value had not been previously defined
- Fixed the bug with incorrect synchronization of “Billet skin analysis” and “Back-end layer analysis” subroutines results using multiview mode
- Some errors in the report generator have been fixed
- Fixed the incorrect simultaneous graph plotting for several traces when using the parameter “Time” as an argument

Heat treatment of extruded profiles

- Fixed an error that occurred when creating a process using a *.scm-file with all properties in it

Phase transformation

- Fixed the incorrect operation of the dropdown list when specifying the initial phase in the “Workpiece parameters” tab

QForm UK 12.0.5

29 July 2026

What's new

Object positioning

- Improved logic for the handle appearance when positioning the cross cut plane
- Fixed an error that had prevented the positioning handle from appearing when selecting an element in the object tree that combines a group of objects, such as “Tools” or “Workpieces”

Diagrams

- Added the option to plot graphs of the virtual RAM used by the current simulation and the entire system. The values of these two parameters are also displayed in the “Simulation state” tab
- Fixed an error that prevented changing the amount of points in the “Graph along line” when switching to another simulation record with an already created line

Processes and operations

- When the setting “Display the project structure in the workspace” is activated, a “Process structure” button now appears in the results viewing window, allowing quick switching between active process chains

Setting initial data

- Now, during the simulation of “Trapped air pressure in tool cavities,” the value of the parameter “Max pressure in cavity” is by default specified as 1000 MPa
- “Simulation Parameters”, “Advanced” section: once modified list of active “Workpiece Fields” is now used by default when creating new operations
- Fixed incorrect operation of the program settings parameter “Keep settings in Operation tab”: when creating a new process, the “Problem type” was not kept
- Now, if the simulation parameter values in the section “Trapped air pressure” differ from the default values, they are highlighted in bold, and with the help of a command, you can quickly go back to the standard values

API

- Fixed an issue with function arguments of the list type that prevented adding items to a list or caused the New Application wizard to crash
- Fixed an issue where the search function invoked by pressing Ctrl+F did not work in the New Application wizard
- Fixed an issue where some functions available in the previous version, including the exceptions functions, were not displayed in the new Application Wizard
- Removed the “Add property setter to App Wizard” and “Add property getter to App Wizard” commands from the database interface
- Fixed an error that prevented the contour of the workpiece from being extruded when executing the function ``geometry_load_extruded_object``
- Fixed an error where the API library for Excel VBA was not installed in the new version of the “Application Wizard”
- Fixed an error where the ``operation_exists`` function always returned ``True`` in the new version of the “Application Wizard”
- The shell crash during execution of the ``operation_delete()`` function has been fixed

Server/Cloud

- Improved the calculation logic for subroutines and tracking in the cloud version of the program. These calculations are now performed on the client computer. Therefore, even if no server is available for the current program version, tracking and subroutines can still be calculated locally, provided that the corresponding options are included in the license.
- Improved representation of the connection state in the “Server settings” window: icons were added
- Improved data transfer in cloud simulation of operation types “Cyclic heating of the tool” and “HT of extruded profiles”

General simulation conditions and capabilities

- Improved algorithms for solving the contact task in simulation of elastic-plastic deformation of a workpiece
- If the stop condition “Distance” is used, the current value of the corresponding parameter is now displayed in the “Simulation state” tab
- Fixed simulation looping when there is no disk space

Diagnostics

- Added a check when starting the “2D axisymmetric” task: the contours of the workpieces and tools must not have negative coordinates along the OX axis

- When clicking on a diagnostic message in the “Source data check: errors and warnings” window, it now navigates to the relevant section even if the message refers to an inactive operation
- Fixed the warning text when starting the simulation with a tetrahedral workpiece mesh and a clipping surface specified as a dxf-contour
- A check has been added when starting the simulation: the load value specified in the parameters of the “Universal” drive in the equipment database cannot be negative
- A warning has been added about the impossibility of using the “General” tool deformation model in simulations with a hexahedral workpiece mesh

Databases

- 6 tool material models have been added for low-cycle fatigue simulation
- Fixed an error where clicking on the inherited workpiece material in the “Workpiece parameters” tab would always show the material inherited at the moment of creating this operation, even if the workpiece material was changed in the preliminary operation

Tracking

- Fixed an error that prevented changing the displayed layer perpendicular to the selected coordinate axis in the “Tracked points, lines” tab for the “Points array”

Subroutines

- Fixed the incorrect execution of the “Pressure” subroutine in the domain of user defined friction condition

FE-Mesh

- Improved the logic of workpiece mesh adaptation in the domain of contact with the junction of sharp edges of two tools
- Fixed an error where the workpiece mesh was remeshed at every step when there was no contact with the tool

Sheet-bulk forming

- Simulation of the “Sheet-bulk forming” operation type is now only possible “With elastic-plastic deformation”: the feature is activated by default and cannot be disabled
- Fixed an error that caused previously assigned “target plane” to reset when remeshing the quad mesh
- Corrected the incorrect output in the “Application Wizard” of some field values of the subroutine “Forming Limit Diagram”

- Improved algorithms of the quad mesh generator

Longitudinal rolling

- Improved algorithms for creating “Extension boxes”
- Fixed an error where the workpiece was incorrectly put in contact with the rolls if in the “Rolling parameters” tab the parameter “Rolling direction” was specified as “Auto ()”
- Fixed an issue that caused the program to crash when starting a simulation after the first of two symmetry planes had been deleted
- Fixed an error where the mesh degraded at the edges of the tail end of the workpiece when exiting the rolls
- Improved clipping stability, which is defined by user in the “Rolling parameters” tab for the operation type “Longitudinal rolling” when using two symmetry planes

Cross rolling

- In the “Rolling parameters” tab, the default value for “Max load” has been added
- Improved algorithms for rotary piercing simulation

Ring/Wheel Rolling

- The list of available functions for graph plotting for the workpiece has been enhanced

Extrusion

- Added an option to select a folder for images and the table of measurements saved in “Deformed contour analysis tool”
- Added possibility to control image scaling in “Deformed contours analysis tool”
- Now in “Deformed contours analysis tool” different images can be exported to different sheets in *.xlsx-file

Heat treatment of extruded profiles

- Added possibility to simulate “HT of extruded profiles” operation type using client-server version

Phase transformation

- Fixed an error where the initial phases specified for local domains in the “Workpiece parameters” tab were incorrectly considered

QForm UK 12.0.4

27 April 2026

What's new

Different interface capabilities

- The option to change the size of the view cube has been added to the program settings

Results view window

- Fixed the program shell crash when the section plane was active, any surface simulation field was selected, and the mouse cursor was hovered over the workpiece at the same time

Work with simulation objects

- Fixed a bug that caused the fill of a 2D contour loaded into a 3D operation to disappear when scaling it on the “Geometry” tab

Diagrams

- Added the option to plot a graph of a number of iterations per simulation step

Images and animation saving

- Added an ability to hide coordinate axes and view cube for images and animation saving

Import and export

- The option to export results to *.qmesh-files has been removed

Special

- Improved the process of downloading a new version of the program. If the program window was closed during download, only the missing part will be downloaded on the next attempt

API

- The ``field_stat()`` method was replaced by ``field_statistics()`` when adding a request for field statistics data to the “Application Wizard” via context menu
- Fixed an issue where exporting operation parameters caused tools to disappear in the original simulation and prevented tools from being created in the simulation generated by the *.scm-script. The problem occurred for processes with an operation chain when exporting parameters for the active chain, the current process, or all processes in the project.
- Various improvements and bug fixes have been made to the new “Application Wizard”
- Fixed an issue where the ``field_stat_at_section`` function returned values in Pa instead of MPa

Server/Cloud

- Improved error message output in the “Server settings” window

General simulation conditions and capabilities

- Cyclic tool heating: improved the logic of simulation start. Now, regardless of the heat transfer type in the preliminary operation, the simulation of the “Coupled” heat transfer with the workpiece is always performed in the operation “Cyclic tool heating”. The structure of the “Simulation state” tab has been optimized, and the “Simulation parameters” tab has been hidden.
- The list of coupled deformation models of the tool has been optimized. The “General” model is now used by default. The “Separate” model has been moved to the end of the list, as it is not recommended to use it in simulations with complex tool geometry, especially with small radii of curvature
- Fixed incorrect output of the workpiece volume in the “Simulation state” tab when simulating a “Cooling/Heating” operation type if the “Volume change coefficient” in the “Workpiece parameters” tab was different from 1
- Improved algorithm for calculating “Trapped air pressure”
- Improved solution acceleration algorithm when solving a plastic deformation task
- Fixed an error where the inactive “Gartfield” field appeared in the workpiece fields list even when it was disabled in the tab “Additional” of “Simulation parameters”
- Fixed a bug that caused the clipping surface not to work before the operation

Diagnostics

- A diagnostic message has been added stating that the automatic gravity positioning set in the “Workpiece parameters” tab is not supported for multiple workpieces

- Added a check whether the tool is specified in the “Workpiece parameters” tab if “Gravity Positioning (-OZ)” is activated
- Added a validation when starting a simulation: clipping of a workpiece with a hexahedral mesh is allowed only in the “Sheet-bulk forming” operation type
- Now, a diagnostic message stating that simulation with dual mesh is impossible is displayed even if the “Coupled” thermal task is set for an assembled tool

Simulation log

- The error reason is now written in the simulation log if the stop condition “Final position” is incorrectly set

Tracking

- Fixed an issue where clicking “Create point” generated in some cases multiple tracked points instead of a single one

Subroutines

- The fields' names of the “Cylindrical coordinate system” subroutine have been improved: now, instead of the indexes “1”, “2” and “3”, the indexes “r”, “t” and “a” are used, respectively, for radial, tangential and axial directions
- Incorrect calculation of the fields of the “Cylindrical coordinate system” subroutine for the values of the “centre=1” and “centre=4” parameters has been fixed

Induction heating

- The bug has been fixed that prevented running simulation with “Inductor” boundary condition if the workpiece mesh parameters were different from default values

Sheet-bulk forming

- A diagnostic message has been added stating that the “Separate” model of coupled tools simulation cannot be used in the simulation
- Fixed shell crash when creating a quad mesh using GMSH

Longitudinal rolling

- Added an option “Roll mesh rotation”. The option is available under tab “Rolling parameters” and is intended for simulations that use profiled roll geometry, e.g., rebar rolling

- Fixed an error at the end of the simulation of the “Longitudinal Rolling” operation, which used “Extension boxes” and two symmetry planes
- Fixed an issue where the roll gap was not changed in the “Reverse rolling” module when using a horizontal symmetry plane with a single upper roll
- Fixed an issue where a roll did not rotate in the “Reverse rolling” operation. The issue occurred when using a horizontal symmetry plane and specifying the rotation speed only for the upper roll in the table of passes
- “Extension boxes” are now created with default parameters if it was not possible to calculate the offset values of the “Extension boxes” from the centers of the rolls with the formula

Ring/Wheel Rolling

- Incorrect calculation of the wheel axis in the “Wheel rolling” module has been fixed

Extrusion

- For the “Flow analysis” mode, you can now specify up to 100000 simulation records
- Added the ability to apply the operation template before loading the geometry, with all the process parameters in place
- Improved the display of the “Flow analysis” group fields. The color palette of neighboring feeders now differs more distinctly in color
- In the “Deformed contours analysis” mode, the option to export images and a table of measurements to an *.xlsx file has been added
- Several improvements have been added to the “Deformed contours analysis” mode interface
- Fixed the bug where fields of the “Flow analysis” group were not displayed in cases where the number of ports equals the number of profiles
- Fixed an error of multi-profile extrusion fields properties collecting using API function ``available_fields_get()``
- Fixed a bug that caused the interface to respond slowly when using the zoom tools in the results window
- Fixed the bug with wrong display of “Measures” table column when using point displacement measurement mode in “Deformed contours analysis tool”
- Added localization support for multiple languages in “Deformed contour analysis tool”
- Fixed the incorrect comparison of straight angles in the “Deformed contours analysis” mode
- Fixed several bugs that occurred when applying process templates in “Operation” tab

Phase transformation

- Fixed an error when the initial phase composition of a workpiece could not change

QForm UK 12.0.3

07 March 2026

What's new

Diagrams

- Now the names of subroutine calculated fields are displayed with the system number of the corresponding subroutine when plotting graphs in points

Images and animation saving

- Added the option to hide the view cube when creating images and animations

Processes and operations

- The order of the “Operation type” list items has been optimized
- Now, when adding an operation to a process chain, the status of the ‘With thermal process’ parameter is inherited from the previous operation
- The tab structure of the source data panel “Operation” has been improved

Import and export

- Fixed an error of exporting a 2D contour of a tool or a workpiece to an *.xlsx or *.xls-file

API

- Fixed an issue in the `blow\_parameter\_set` function, which caused an error when used in operations other than “General forming” and “Cooling/Heating”
- A couple of things are improved in the new “Application Wizard”
- Fixed an error where calling `field\_at\_point` for a workpiece with a hexahedral mesh could crash the application or fail because the field value at the specified point could not be determined

Server/Cloud

- Fixed incorrect display of the license expiration date

General simulation conditions and capabilities

- Improved algorithms for simulation with spring loaded tools

Boundary conditions

- Added the option to set the “Heat flow per area” for the tool

Databases

- Now the selected cell of the specified table function is highlighted on the graph
- Fixed the reason for the program shell crash when trying to save the operation template

Tracking

- For the area of traced lines in 2D simulations, the option to select the number of the displayed layer of lines perpendicular to the X or Z axes has been removed
- Fixed an error that resulted in the manual positioning of the workpiece not being taken into account when inheriting traced objects
- Fixed an error that resulted in intermediate simulation records being activated after tracing through a chain of operations when switching between simulated operations

Subroutines

- The capability to debug user-defined subroutines describing flow stress and friction laws has been implemented
- Fixed a bug caused by the implicit integration method not calculating the fields of the “Forging ratio” subroutine
- The problem of displaying the fields of the initial coordinates in the “Displacement” subroutine has been fixed

FE-Mesh

- A diagnostic message has been added stating that a dual mesh cannot be used for hexahedral mesh workpieces
- When using a hexahedral mesh for a workpiece, the “Mesh Parameters” group of workpiece fields is now hidden

Sheet-bulk forming

- Fixed an incorrect range of values for the axes of the “Forming Limit Diagram” window when executing the corresponding subroutine for a chain of operations

Longitudinal rolling

- Fixed an error where the default stop condition “Workpiece exit from stand” did not trigger in projects using extension boxes
- Fixed an error that caused the “Clipping after operation” not to be performed in “Longitudinal Rolling”
- Improved simulation stability

Cross rolling

- Improved simulation algorithms

Extrusion

- Added additional column for angle measurement in “Deformed contour analysis tool”
- Fixed a bug where in some cases the Export profile section command was missing from the Export menu
- Fixed an issue where in some cases, when creating a new operation, the “Load default values” command was not executed in the “Extrusion” tab

Heat treatment of extruded profiles

- Unnecessary interface elements have been removed

QForm UK 12.0.2

31 January 2026

What's new

Different interface capabilities

- An option to invert the mouse wheel has been added to the program settings

Object positioning

- Improved logic of assigning the initial position of the handle when positioning sprayers
- Fixed a bug that caused the positioning of copied objects to be reset

Work with simulation objects

- Added a checkbox to select or deselect all objects in the geometry inheritance window
- The “Cancel” command has been added to the axis assignments section
- When zooming the geometry of objects using the “Change scale” command in the “Geometry” tab, the volumetric expansion coefficient is now set instead of linear. When inheriting geometric objects from a previous operation, the “Change Scale” command is not available.
- Fixed the incorrect display of the assembled tool axis

Diagrams

- Added the option to plot the values of fields “Trapped air pressure” and “Trapped air volume” for traced points
- In the graph window of the calculated field along the line, the option to display the “Distance” axis on a logarithmic scale has been removed

Processes and operations

- Now, when switching blows of a multi-blow operation using the simulation control panel buttons, the last simulated blow record is activated by default

Special

- The Simulation State tab now displays information about the number of threads used in the simulation and the status of the reproducibility mode. This information is also written to the text log file if the multithreading parameters differ from the default values.

API

- Added the functions ``get_tracking_points_for_operation'`, ``get_tracking_lines_for_operation'`, ``get_tracking_points_for_chain'`, ``get_tracking_lines_for_chain'`, which return information about traced points and lines for specified operation or chain of operations
- Added the ability to control the visibility of objects based on planes of symmetry
- The ``tracking_points_get_for_chain'` and ``tracking_lines_get_for_chain'` functions now return an array of objects containing the tracked object ID and the operation number in which the object was created. Inherited objects are not included in the returned array.
- Fixed an error with the asynchronous operation of the ``start_simulation()'` function`
- Fixed incorrect operation of the function ``qform.execute_tracking()'` in synchronous mode when working with a chain of operations`

- Fixed a bug that caused the New File button on the toolbar of the new “Application Wizard” to not work
- Fixed a bug that caused the inversion of the palette for the ``field_palette_set`` function to not work
- Fixed an error that did not take into account the change of the ``mesh_adapt_koef`` parameter in the Application Wizard

Server/Cloud

- Improved data transfer stability and cloud computing performance through a new system for routing and delivery control

Batch calculation mode

- The size of the window that opens when you click “Schedule the task” has been increased

General simulation conditions and capabilities

- Improved the search for normals for quadratic elements of the tool
- Fixed a bug that caused an incorrect simulation step in “Cooling/Heating” operations with phase transformations if the simulation was stopped and started again
- The algorithm for simulating the “General” model of coupled tools deformation has been improved

Boundary conditions

- The algorithm for determining how a tool is fixed with a boundary condition has been improved

Databases

- Added the ability to define an approximate hardening curve for sheet metal using a Ludwik-type equation specified in terms of its coefficients, based on standard tensile test parameters
- Fixed a bug that caused the search for deformed materials by name to fail if some characters were separated by spaces in the query text

Tracking

- Expanded the possibilities of creating an array of points: you can create either all points, or only on the surface, or only in volume

- Optimised and significantly reduced the amount of recorded information when tracing points
- Improved logic for exporting field values at points for a chain of operations
- Improved the algorithm for importing points from a file
- Fixed incorrect line tracing when rotating the workpiece around its own axis between blows of a multi-blow operation in the case of using a dual mesh for the workpiece
- Fixed incorrect point tracing in a multi-blow operation when using a hexahedral mesh for the workpiece

Subroutines

- The names of commands in the “Subroutines” tab have been clarified, and the structure of the standard subroutines selection window has been improved

Induction heating

- A local coordinate system has been added to determine the position of the inductor relative to the workpiece
- Fixed some errors in the simulation algorithm

Sheet-bulk forming

- Now there are two algorithms available in the “Quad Mesh Generator” for constructing a grid: “With extension to the contour” and “Strictly from the contour”. The first method is used by default.
- Fixed a bug that caused the interface to crash in some cases when executing the “Create quad mesh” command
- Improved the algorithm for clipping the hexahedral mesh

Longitudinal rolling

- Added the option to select the method of changing the gap between rolls in the “Rolling parameters” tab for the “Reverse rolling” operation type. The rolls gap can be changed by shifting the upper roll (by default) or by shifting both rolls
- Fixed an error due to which the rolls did not change the gap in the “Reverse rolling” operation if the axis of the workpiece was located above the axis of the upper roll
- Improved simulation stability

Ring/Wheel Rolling

- For the “Wheel Rolling” operation type, the list of “Rolling parameters” has been improved

- Now it is impossible to run a simulation that simultaneously uses centering rolls and enables “Ring centre stabilisation along the Y axis”
- The simulation step calculation algorithm has been improved: “Maximum ring rotation angle per step” now decreases during the simulation process as the cross-sectional area of the ring decreases
- Improved simulation stability

Extrusion

- Added a possibility to export tables with measurement information using the “Deformed contours analysis tool”
- Fixed a bug that caused the output fields of subroutines using a trace as an object to be unavailable. The bug did not occur if subroutines using a workpiece as an object were calculated in parallel.
- Fixed the bug with charge weld calculation for individual profile in case of multiple profile extrusion

Heat treatment of extruded profiles

- Added an ability to set workpiece local mesh parameters

Grain size evolution

- Added capability to import and export of grain size evolution fields using *.csv2d-file in “Extrusion” and “Heat Treatment of Extruded Profiles” modules
- Incorrect initialisation of the “tx” fields for static and metadynamic recrystallisation during postprocessor execution of the “Grain size change” subroutine has been fixed

QForm UK 12.0.1

21 November 2025

What's new

Statistics

- Now, in the “Statistics” window, the surface option is enabled by default when plotting histograms for surface fields. Previously, the “volume” option was selected by default, although the plotting was actually performed on the surface.

- Improved operation of the “Statistics” window when switching records and calculated fields, when dual mesh is used for workpiece

Import and export

- Sped up the export of results at traced points to files with the extension *.xls and *.npz
- Fixed application crash occurring during import of corrupted mesh files

Special

- File with the *.qform-r extension (with restricted access): exporting points and lines is available, as well as, for the “Extrusion” module, the options of exporting traces' data, exporting bearings to a *.dxf file and exporting a profile section to a *.csv2d or *.dxf file are available
- File with the *.qform-r extension (with restricted access): the options for saving the *.qform-r file have been moved to the “Export” menu, the option to simulate in “Batch mode” has been added, and the option to export the cross-section has been disabled

API

- A new version of the “Application Wizard” has been added. Main features of new version: implemented a search by function name, added support for functions with multiple arguments, added support for multiple tab documents, implemented support for the keywords `\_pass` and `\_return` in *.scm-files
- API functions have been added to control the display of contacts and a deformed contour
- Added a new `field\_statistics` function to manage statistics
- Fixed an error that caused the program shell to crash during the sequence of actions: creating a section plane through the “Application Wizard”, switching to positioning mode and then deleting this plane through the “Application Wizard”
- Fixed an error that caused the program shell to crash when deleting a traced point using the `object\_delete` function

QShape

- Fixed a bug that resulted in node IDs being displayed on the highlighted surface
- Fixed an issue where the letters “A” and “B” were not displayed when the edges were drawn together

General simulation conditions and capabilities

- Added the option to set the initial gauge pressure of trapped air in the closed cavities of the die
- Unnecessary tabs are hidden in the source data panel for the “Cyclic tool heating” type of operation
- Incorrect operation of the local friction domain between the workpiece and the tool has been fixed
- The algorithm for calculating the velocities of a rotating workpiece has been improved when the option “Rotation” is active in the “Simulation parameters” tab
- Incorrect heating of the workpiece due to friction with the tool has been fixed
- Fixed an error that caused the shell to fall when playing results with the “Trapped air pressure” and “Trapped air volume” simulation fields active
- Fixed the cause of an internal error that occurred in some cases when starting a simulation with an “Arbitrary” drive

Boundary conditions

- Fixed a bug where when copying a boundary condition, it was assigned the name “Area” instead of its name

Databases

- Fixed an error that resulted in the material model not being opened in the database in the operation with the inherited material of the workpiece

Tracking

- Now, when running a trace with the results of the main simulation obtained in version 12.0.0 or earlier, the user receives a message stating that in order to perform the trace, the main simulation must be performed in the current version of the program. This is due to changes in some simulation algorithms.
- Improved algorithm for tracing points and lines between 2D- and 3D-operations
- Fixed incorrect line tracing along the chain of operations when using the implicit integration method
- Fixed incorrect line tracing when “Place upside down before operation” is active in 2D operation

Subroutines

- The algorithm for transferring the simulation results of subroutines from a 2D operation to a 3D operation has been improved

Sheet-bulk forming

- Improved the algorithm for clipping a hexahedral mesh
- Fixed a simulation start error that appeared when the local domain of the tool's mesh parameters was set, but there was not a single tool in the operation

Longitudinal rolling

- For custom Lua subroutines, the ``t_ext`` variable has been added, which is the time taking into account the extension boxes
- For the “Reverse Rolling” operation type, a check of the rolling axis has been added, which must be parallel to the X or Y axis
- Fixed an error due to which the parameters of the tool drive did not change in the type of operation “Longitudinal rolling”
- Fixed an error that led to incorrect deformation of the workpiece in case of contact with a tool for which zero velocity was set. Now such an instrument is perceived as stationary

Ring/Wheel Rolling

- The “Wheel rolling” module has been completely redesigned: algorithms for calculating the kinematics of equipment, contact task, algorithms for remeshing, and structure of the source data has been improved

Extrusion

- Added possibility to display fields and create graphs for “Charge weld” group for each profile in case of multiple profiles extrusion
- Added tool tips for deformed contour analysis mode
- Some capabilities for viewing simulation results are restricted if no license is available
- Changed the structure of the fields for “Multiple profiles analysis” group
- Improved logic for displaying calculation fields of the “Grain size evolution” group and of the “Streaking lines analysis” subroutine
- The “Flow analysis” fields group is now unavailable for solid profiles
- Additional fields for multi-channel extrusion are now calculated by default, and the corresponding parameter has been removed from the “Simulation parameters” tab
- Added column with thickness change values in “Deformed contours analysis tool”
- Added “Settings” for “Deformed contours analysis tool”. Interface language, deformed point search method and measurement system can be changed via “Settings”
- Added notification if butt-end length is not specified
- Fixed the bug with the display of minimum and maximum values for the “Average profile velocity” field for multiple profiles analysis

- Fixed a bug with point projection using the nearest point method in the “Deformed contours analysis tool”

Heat treatment of extruded profiles

- Added subroutines usage possibility
- Added ability to set an angle of the sprayers to group axis of the linear group

Phase transformation

- Fixed an error where in some cases “All phases” graphs were not plotted for the traced point

QForm UK 12.0.0

17 September 2025

What's new

Object positioning

- In the positioning mode, a menu has been added for setting the starting and ending positions of the handle, in which you can select either the global origin or for a specific object: the local origin, node number, center of mass coordinates, the origin of the axis, and the traced point ID
- Improved logic for assigning the initial position of the positioning handle when selecting an object: if the center of mass of the selected object falls into the results window, the handle appears in the center of mass, otherwise the handle appears at the point of mouse click
- The “Move Handle” command has been removed from the list of right-click menu commands when clicking on an object in positioning mode

Results view window

- Improved display of curved contour sections uploaded from *.dxf-files
- The “Set transparent/Opaque” and “Show/Hide finite elements” commands have been added to the right-click command menu when clicking on an unassigned object in the object tree or in the results viewer
- Fixed an issue where selecting an object in the results view window did not correctly activate the corresponding object in the “Axes” tab

Work with simulation objects

- Added the option to select the plane in which to place 2D objects loaded from a *.dxf-file
- In the “Geometry” tab, the list of available objects that the uploaded geometry can be converted into is optimized
- A bug has been fixed that allowed users to create a assembled tool using objects
- Fixed an error that prevented the assembled tool being deleted when all of its parts were removed
- Fixed an issue where, after canceling the running process of revolving a 2D contour into 3D, the “Revolve” command did not work again with the same parameters

Diagrams

- Added the option to display graphs of the X, Y, and Z coordinates of a tracked point
- The algorithm for plotting the calculated field along the workpiece hexahedral mesh line has been improved

Measurements

- Fixed an error that caused the size of the dimension frame to change while zooming objects if the active view did not match any of the global coordinate system planes.

Statistics

- Improved the logic of the “Statistics” window when working with multiple workpieces: statistics are showed only for the displayed workpieces.

Processes and operations

- Increased the window width for entering the name of process or operation

Setting initial data

- In the “Tool parameters” tab, the option has been added to select the object to which all other objects are put into contact at the beginning of the simulation. Previously, only the workpiece could be such an object.
- Added the option to set accumulated effective strain for the local area of the workpiece
- The list of parameters in the “Step size” section has been optimized in the source data tab “Simulation parameters”

Import and export

- Added unit specification to the exported *.dxf-file according to the unit system selected in the interface
- Fixed a bug that in some cases made it impossible to export the original geometry of objects

Special

- Option “Open in source data mode” has been added to the project open dialog. When this option is enabled, the project will be opened at zero simulation step.
- Added the option to save a *.qform-project or a separate process to a file with the *.qform-r extension (with restricted access). You can work with such project as with a regular project, but at the same time some export possibilities are restricted, in particular, the export of the original geometry
- Added checksum recording and verification to *.qform files to ensure their integrity

API

- Added API functions to control the display of Distorted contour/surface
- Added function ``selected_objects_get`` for getting properties of selected objects group
- Added the ability to export images with a transparent background
- Added the ability to control the visibility of objects edges
- Added the functions ``object_is_using_dual_mesh``, ``object_is_using_hexahedral_mesh``, ``simulation_is_using_hexahedral_mesh``, ``simulation_is_using_dual_mesh``, to determine whether a dual or hexahedral mesh is used in the simulation
- Added functions for deleting and renaming database items
- Exporting an operation to a *.scm script: added the ability to export all operation parameters, not just those that differ from the default values
- Added functions: ``license_key_timeout_set``, which allows to set the HASP search time, at the end of which an error is returned, and ``license_key_status``, which checks the key status
- Added the ``project_export_as_script`` function, which allows exporting source data from a specified qform-file to a *.scm script
- Added the ``object_get_transform`` function gets the current transformation matrix of an object. It returns a 4x4 matrix, which is a collection of values that describe the current position, orientation, and scale of the object in space.
- Added ability to export data from traced points in *.npz format (binary file format for storing data arrays for Python's NumPy library)
- Implemented functions for importing a field onto an object:
 - ``geometry_source_file_name`` - retrieves the geometry source file name,
 - ``geometry_source_file_extract`` - exports the object's original geometry,

- ``geometry_add_imported_field`` - imports an array of field values into the object's nodes
- Added the ability to import *.qdat-files in the database using the function ``db_object_import``
 - Exporting an operation to a *.scm-script: you can now export an operation, an active chain, an active process, or all project processes separately
 - Exporting an operation to a *.scm-script: now, if the exported operation uses standard database elements, they can optionally be exported to separate *.qdat-bin-files. In this case, when importing the operation, there will be no binding to the standard database of the current version of the program
 - Exporting an operation to a *.scm-script: the option to “Export the positioning history as a transformation tensor” has been added. In this case, when importing an operation, the positioning history will be empty, and the position of the objects will correspond to their position, taking into account the positioning in the *.qform-file from which the export was performed
 - Added functions to control two “Forging manipulator” boundary conditions in the “Blows” tab
 - Added functions for requesting and specifying the number of cycles for the “Cyclic heating of the tool” operation type: ``heating_cycle_count_get``, ``heating_cycle_count_set``, ``heating_cycle_get_current``, ``heating_cycle_set_current``
 - API function ``available_fields_get`` now returns the predefined scale range for the field in “field_max” and “field_min” if it is available. Otherwise, it returns zeros, indicating that the field range is defined “within step”.
 - Added the option to assign the pivot axis using coordinates for the ``geometry_load_revolved_object`` function
 - Improved logic of exporting an operation to a *.scm-script
 - Improved functionality with the “Point cloud” boundary condition. Now, files with the temperature values are automatically loaded when setting the path to the directory containing the files.
 - Fixed an issue where the ``view_overall_dimensions`` function returned overall dimensions without accounting for objects whose display was turned off
 - Fixed functions for collecting information from graphs
 - Fixed incorrect operation of the ``db_object_import`` function
 - Fixed an error that caused not all objects from the specified geometry file to be loaded when using the ``geometry_load`` function
 - Fixed some errors in exporting operation parameters to a *.scm-file
 - Fixed incorrect operation of the ``object_domains_get`` function

QShape

- Improved the logic of selecting the default directory when opening, saving and importing files

- Improved the color scheme used for highlighting surfaces and objects

General simulation conditions and capabilities

- Added the option to take the pressure of the compressed air in enclosed cavities of the die into account
- The algorithm for determining the time step has been improved: the projection of the workpiece moving point onto the quadratic surface of the tool is now taken into account
- The correct accounting of the infinitesimal rotation tensor is implemented when using the implicit method
- Improved simulation stability of the “Separate” tool deformation
- Incorrect accounting of the simulation step duration in the “Cooling/heating” operation type has been fixed
- Incorrect simulation of the “Coupled” heat transfer of the rotating tool with the workpiece has been fixed
- Incorrect simulation of plastic deformations during elastic unloading has been fixed
- Fixed an error that caused the center of mass to not be calculated for a workpiece with a hexahedral mesh

Boundary conditions

- The functionality of the boundary condition “Point cloud” has been improved: import capabilities have been expanded, mirroring and periodicity for the boundary condition box have been implemented, imported files are stored inside the *.qform project
- Implemented display of points of the boundary condition “Point cloud”. The display parameter is enabled by default and is located next to the path for boundary condition files.
- Improved tooltips for creating the “Point cloud” boundary condition
- Fixed the bug where the “Temperature” boundary condition specified by the surface was not applied
- Fixed an error that occurred when the geometry of an area of boundary condition or mesh parameter was loaded from a *.dxf-file

Databases

- If several graphs are displayed at the same time in databases to describe any parameters, they now have different colors, and a tooltip pops up while hovering a cursor over them
- In the equipment database for the “Universal” drive type, the option to set the tool velocity depending on the load generated on it has been added

Tracking

- Indicators of those tracked points for which simulation results are missing have been added to the object tree
- The “Tracking points' fields” section has been removed from the simulation fields selection panel
- Expanded the possibilities of exporting fields in tracked points. The export of fields for a multi-blow operation and a chain of operations is now available.
- Improved point tracing algorithms
- Fixed an error of not taking the displacement of traced lines into account during the gravitational positioning set in the “Workpiece parameters” tab
- Fixed incorrect point tracing in some simulations with dual mesh and a clipping surface
- Fixed incorrect assigning of undersurface flow lines for the workpiece in 3D simulations using symmetry planes for some cases
- Improved algorithms for clipping tracked lines

Subroutines

- In the “Subroutines” tab, the names of the added subroutines are now marked with color separators. The option to write comments on subroutines has been added, and these comments are also displayed in the list of calculated fields
- The names and structure of the fields calculated when “Gartfield” is activated in the “Advanced” section of the simulation parameters have been improved, and the names and structure of fields of the standard “Surface Flow Analysis” subroutine have been improved

FE-Mesh

- A new workpiece mesh parameter “Number of element layers along the length” has been added. The parameter is available in a 3D operation if the workpiece is inherited from a “2D plane strain” type operation, and allows to set the required number of tetrahedral layers longitudinally.
- In the “Geometry” tab of the source data panel, the functionality of the “Revolve to 3D” command has been expanded. Now, in 3D operations, when revolving contours loaded from *.dxf-files, the “Element size factor” parameter is available, which allows to reduce or increase the maximum element size of the created mesh
- The “Mesh parameters” block has been added to the lists of the main calculated fields of the workpiece and tool, which includes the “Defined adaptation” and “Defined element size” fields, which allow to evaluate the user-assigned parameters of volume mesh during the simulation. The standard subroutine “Element size” has been removed. In the “Simulation parameters” tab, the “Adaptation” fields for the workpiece and tool have been removed from the “Advanced” section

- Incorrect accounting of the tool mesh adaptation factor has been fixed
- Fixed an issue where local mesh adaptation on the tool surface was applied incorrectly
- Fixed an error that resulted in allocating all available RAM during the simulation process if the mesh parameters had local areas' geometries loaded from *.step-files
- Improved algorithms of generating a volume tool mesh
- Improved algorithms for simulation with dual mesh of workpiece

Induction heating

- Added the option to plot induction heating parameters in the “Boundary conditions” tab
- In the deformed materials database, in the “Electromagnetic properties” section, the skin layer thickness on temperature dependence graph is now displayed
- Nonuniform induction heating of ferromagnetic alloy workpieces has been fixed

Sheet-bulk forming

- Added tools for generating a quad mesh by invoking the GMSH program functions
- Added the option to set the “Forming Limit Diagram” using the modified Keeler model
- Added the option to set the “Forming Limit Diagram” using the Abspoel-Scholting-Droog model
- Geometry from *.dxf-file is imported to the XOY plane by default now
- Scaling tools in the “Forming Limit Diagram” window have been improved
- The option of changing the color palette of the “Forming Limit Diagram” has been disabled
- Now, changing the mesh parameters in a project with a previously generated quad mesh will show the current parameter values, rather than the default ones
- The external nodes of the generated quad mesh are now stretched onto the original geometric contour of an object
- The interface for setting quad mesh parameters has been improved: the list of parameters and their default values have been optimized, and parameter names have been corrected
- Added the option to re-generate a quad mesh with edited parameter values
- After generating the quad mesh, the mesh is automatically displayed
- Improved interface for specifying the “Forming Limit Diagram” in the deformed materials database
- Now, for the “Forming Limit Diagram”, the “fld_zone” field is calculated in the front-end and is not stored on disk
- When the “Forming limit diagram” is edited in the properties of the workpiece material, as well as when the workpiece material is reassigned, the “fld_zone” field is recalculated automatically. The “Forming limit diagram” window is also updated.
- Fixed incorrect values saving of the executed subroutine “Forming Limit Diagram” when exporting fields at traced points

- The simulation step size has been adjusted for the case of two workpieces contacting with a hexahedral mesh
- Improved algorithms for generating a quad mesh
- Fixed an error that caused the values of the FLD field to change after trimming the workpiece

Longitudinal rolling

- Added the option to select the rolling direction in the “Rolling parameters” tab
- Added consideration of actual distances between stands and the actual workpiece length for solving the thermal task in longitudinal and reverse rolling modules. Use the “Extension boxes” parameter in the “Rolling parameters” tab to create additional boundary conditions.
- In the “Tool parameters” tab, the option to set “Coupled” heat transfer in rolling modules has been removed
- Fixed an error that occurred during simulation of a “Reverse rolling” operation if the workpiece was rotated in a certain pass and the dual mesh was disabled in the calculation parameters
- Fixed an error that caused an unexpected simulation stop when two symmetry planes were used in continuous longitudinal rolling simulations
- Fixed an issue that caused incorrect results when rolling a workpiece whose dimension along the rolling direction was smaller than its transverse dimension. The bug appeared in both the longitudinal and reverse rolling modules when the workpiece axis was either undefined or not aligned with the rolling direction.
- Fixed an error, as a result of which, when copying source data from a “General deformation” type operation to the next “Longitudinal Rolling” type operation, the activated general deformation simulation of the tool was copied, which prevented the calculation from starting

Cross rolling

- The ability to specify zero velocity to Disher disks to account for non-drive equipment has been added
- Improved simulation algorithms

Ring/Wheel Rolling

- A new type of fixed drive tool has been added for vertical rolling processes - the “Support roller”
- In the “Ring rolling” module, it is now possible to specify the direction of rolling, and the option to set the second main roll has been added

- Added automatic putting of the guide rolls into contact with the workpiece at the beginning of simulation in case when at least one of the guide rolls intersects with the ring
- Added the option to simulate the ring rolling with a tilted mandrel
- The parameter “Diameter of guide rolls” has been added to the “Rolling parameters” tab
- The possibility of raising the upper axial roller when the specified diameter is reached is added
- The “Circular mandrel motion” option has been removed from the “Rolling parameters” tab
- Increasing mandrel velocity to idle velocity when there is no load on the mandrel has been added
- Improved algorithm for determining the position of guide rolls relative to the ring during the simulation
- In the tab “Rolling parameters”, in the “Advanced” section, the parameter “Ring center coordinate along the Y axis” is replaced by the parameter “Ring offset angle”
- In the workpiece mesh parameters, the minimum adaptation in contact area is now 6 by default
- The algorithm of simulating the contact task has been improved
- The logic of setting and calculating the relative difference in the rotational velocities of the main roll and axial rolls (radial/axial) and the relative difference in the rotational velocities of the upper and lower axial rolls has been changed - according to the documentation of SMS Meer rolling mills
- Fixed an error where copied objects could not be converted to module-specific object types
- Fixed incorrect process kinematics when considering the dependence of mandrel speed on radial force
- Fixed an issue with zero load on the guide rolls during the ring rolling process
- The algorithms of guide rolls have been significantly improved

Extrusion

- Added API functions to manage the results of billet surface defects subroutines
- Added new warning message in simulation message log. It shows high velocity gradients which can influence the overall simulation accuracy
- Special markers have been added to the results playback panel to distinguish between different types of tasks calculated within a single operation
- Added new tool for analyzing deformed contour of extrusion tool. This mode is available in the options list of “Export” tool
- Improved temperature simulation, updated temperature simulation accuracy settings
- Improved overall accuracy of thermal calculations

- In QShape template “Keep unchanged” option of “Adjust bearings” command is set by default
- Incorrect display of the “Billet skin analysis” subroutine points on the first simulation record has been fixed
- Fixed the bug that made it impossible to create a trace if all trace data had been exported earlier
- Fixed the bug that cause inability to export all traces data
- Fixed a bug with wrong identification of “Bearing angle” fields on solid choke angles surfaces near bearing entry
- Exporting an operation to a *.scm-script: fixed some bugs

Heat treatment of extruded profiles

- Added support for arrays of points tracking
- Implemented the possibility of using the exit desk
- Added the option to simulate two or more profiles simultaneously
- Improved maximum temperature change step determination algorithm
- Improved spray fields displayment at the 3D-simulation stage
- Added diagnostics of database sprayer parameters when starting the simulation
- Fixed incorrect operation of the stop condition at the 2D simulation stage, which led to an error at the 3D stage as a result of uncertain flow stress
- The unexpected simulation stop in some cases has been fixed
- Fixed an error that blocked the option to rotate objects in the results viewport after switching between 3D/2D viewports at the 1st stage of the simulation

Phase transformation

- Added the option to set the initial phase for the local area of the workpiece
- The possibilities of displaying graphs of model parameters have been expanded in the database of deformable materials for the diffusion model of phase transformation
- Added the option to use volume fractions of phases as parameters of the “UserFields” function in Lua-subroutines
- Improved rendering of graphs of phase transformation parameters in the database of deformed materials
- The error in phase transformation simulation with dual mesh of the workpiece has been fixed

Grain size evolution

- In Lua subroutines added access to the “grain_rex_vol_fraction”, “grain_avg_size”, and “grain_unrex_size” fields calculated in the “Grain Size Evolution” module
- Added the option to set the initial grain size for a local area

- Updated the JMAK model for simulating grain size evolution
- Fixed an error of grain size evolution simulation in “Cooling/Heating” operations

QForm UK 11.2.0

25 April 2025

What's new

Object positioning

- Fixed incorrect execution of gravitational positioning of the workpiece in manual object positioning mode

Import and export

- Fixed the bug that in some cases caused the program window to close when loading geometry from a *.CSV2D-file

License

- Improved license detection stability

Special

- Improved notification when a new version is released. Download is available directly from the program along with the release notes

General simulation conditions and capabilities

- Fixed incorrect calculation of elastic-plastic deformation of the workpiece when using “Clipping surface” “In progress of simulation”
- Fixed incorrect calculation of “general” coupled deformation for rotating tools in the “2D plane strain” task type
- Fixed incorrect calculation of “general” coupled deformation for rotating tools in the “3D” task type when the simulation was stopped and then resumed
- Fixed the bug that led to inaccurate results when accounting for the small rotation tensor of the workpiece, for example in sheet bending simulations
- Fixed incorrect time step calculation in simulation of certain processes

- Fixed incorrect axis shift of the tool with “Arbitrary” drive type in “General” coupled deformation simulation using the implicit method
- Fixed incorrect calculation of the coupled thermal problem at the contact between the workpiece and a rotating tool
- Fixed incorrect thermal simulation in the workpiece when using the dual mesh method

Boundary conditions

- Fixed the bug where a local environment area with geometry loaded from a *.step file did not work in the “Cooling/Heating” operation type

Tracking

- Fixed incorrect tracing of workpiece points defined on a simulation record with elastic unloading
- Fixed the bug where a contour added for tracing in a 2D simulation was not displayed in the results viewing window

FE-Mesh

- Fixed missing edges on a 3D workpiece inherited from a 2D axisymmetric operation
- Fixed incorrect tool mesh adaptation targeting the contacting workpiece when preliminary gravitational positioning of the workpiece on the tool was activated in the “Workpiece Parameters” tab
- Improved mesh adaptation logic for the tool with default parameters
- Improved mesh adaptation logic on the free surface of the workpiece
- Fixed incorrect contact calculation and workpiece remeshing in the contact zone with a tool assigned translational motion along an axis and rotating around another axis at the same time
- Fixed the bug where in simulations with multiple workpieces, a local mesh box specified for one workpiece affected all workpieces within that area
- Fixed the bug where a local mesh box applied to a specific tool was incorrectly shifted in some cases when starting the simulation
- Fixed the bug where a local tool mesh box did not work if an assembly tool was specified in its settings

Longitudinal rolling

- In the “Reverse Rolling” operation type, the column “Pre-cooling in Tool” has been removed from the “Passes” tab of the initial data panel

Extrusion

- Fixed a bug causing incorrect display of min/max values on the profile front-end for fields Seam length and Distance from stop-mark

Heat treatment of extruded profiles

- Fixed the incorrect operation of the local environment area when the box did not capture the initial position of the profile section

Phase transformation

- Fixed the bug that caused the results of the “Average Cooling Rate” simulation field to reset when the simulation was stopped and resumed from a certain record

QForm UK 11.1.1

05 March 2025

What's new

Different interface capabilities

- Fixed an error where, when using the “International (SI)” unit system, the simulation time was displayed incorrectly in the “Simulation state” tab and the log

Object positioning

- Improved gravitational positioning of the workpiece with a hexahedral mesh

Work with simulation objects

- Now, when converting an object in the “Geometry” tab into another existing object in the operation, the replaced object received not only the geometry of the converted object but also its alternative name
- Fixed the bug where the geometry import window automatically closed after directly loading a *.step-file, even if surface mesh defects were present

Section planes

- Fixed the bug where 2D objects couldn't be selected in the results window if a section plane was activated in one of the operations
- Fixed the bug in the algorithm for assigning the initial position of a section plane

Import and export

- Improved import of calculation fields from *.unv-files
- Fixed an issue that caused the program to crash when loading a 2D quad mesh from *.unv-file

License

- Added the “Additional licences” list for CAD products in the “Licence info” window
- Fixed a bug that caused a network licence to unexpectedly switch to “Initial data preparation mode”

Special

- Added Japanese documentation for the “Extrusion” module

API

- Updated the logic of the ``async_wait`` function to now provide a list of all states between its calls
- Added functions to control the display of the active field scale: `field_option_set`, `field_levels_set`, `field_range_set`, and corresponding functions to retrieve values
- Fixed some errors in exporting project source data to an *.scm script in s-expressions
- Fixed a dimensional mismatch issue in the “field_min” and “field_max” arguments when calling the ``active_field_set`` and ``active_field_get`` functions

Server/Cloud

- Fixed the cause of the internal server error after receiving preprocessing results in the “Extrusion” operation type simulation

QShape

- Improved accuracy for importing *.step-files exported from Siemens NX

General simulation conditions and capabilities

- Optimized algorithm for calculating workpiece velocity during free fall
- Improved algorithm of workpiece elastic unloading
- Fixed the bug in calculating the simulation step during the workpiece contact search with the rotating tool
- Fixed a bug that caused in some cases incorrect calculation of phase transformation, grain size evolution and diffusion fields, as well as some standard and lua subroutines with accumulated fields when workpiece remeshing
- Fixed the bug in the elastic unloading algorithm for the 3D workpiece when the workpiece's axis lying on the symmetry plane
- Fixed the bug in calculating the workpiece temperature during tilting on the first stroke of a multi-stroke operation with pre-cooling and using a dual mesh method
- Fixed the bug where the “Volume Change Coefficient” set in the “Workpiece Parameters” tab did not work when using the dual mesh method for the workpiece
- Fixed the incorrect operation of the “General” coupled tool deformation model when the simulation included elastic-plastic deformations of the workpiece and used the “Simple” heat transfer to workpiece
- Fixed the bug in the operation of the hydraulic press with an accumulator drive: the drive did not stop upon reaching the maximum force
- Fixed the cause of the “Can't prepare source data” error, which prevented the simulation from continuing or restarting from previous steps
- Fixed the incorrect compaction of the porous workpiece material when using the “Gurson-Tvergaard-Needleman” plasticity condition

Boundary conditions

- Fixed the bug where boundary conditions “Support” and “Support with possible separation” were not applied to tool nodes contacting with other tool
- Fixed the bug where the “Pressure” boundary condition assigned to the workpiece surface was not applied to all nodes of the hexahedral workpiece mesh after its remeshing
- Fixed an issue where, in project with two forging manipulators, the inactive manipulator did not move along with the workpiece
- Fixed a bug that caused surface boundary conditions to stop working when recalculating a problem from some record

Diagnostics

- Improved diagnostics for detecting boundary conditions on the tool in coupled simulations

Simulation log

- Restored the log message “Initial height exceeds mechanical press stroke” for cases where the press stroke is insufficient to meet the stop condition

Databases

- Fixed a mistake in the 18CrNiMo7-6 material model for hot deformation: one of the parameters of flow stress formula was specified incorrectly
- In the deformable materials database, under the “Flow Stress” section, the “Strain” parameter has been renamed to “Plastic Strain”
- Fixed errors in saving and loading the template in the “Simulation Parameters” tab

Tracking

- Fixed an error where lines defined on records after trimming were not traced onto records preceding the trimming
- Improved tracing logic in operations with multiple strikes or passes

Subroutines

- Names of added standard subroutines are now always displayed in the interface language

FE-Mesh

- Improved the algorithm for shifting the nodes in the hexahedral mesh of the workpiece
- Added the option “Prohibit increasing of element size” for the hexahedral mesh of the workpiece
- Improved the algorithm for calculating tool mesh adaptation
- Optimized the algorithms for generating volumetric meshes of the workpiece and tool in the first simulation record
- Fixed incorrect operation of the “Element Size” subroutine for the tool
- Improved the remeshing algorithm when a lap forms on the symmetry plane
- Fixed the incorrect operation of the local workpiece mesh parameter area with increased minimum adaptation
- Fixed the bug that caused long generation times for the workpiece volumetric mesh when the maximum adaptation was increased
- Fixed the bug where the element size constraints specified for the local workpiece area were not applied
- Fixed the incorrect operation of maximum adaptation specified for the local tool area
- Improved logic of workpiece mesh adaptation when forming laps

Sheet-bulk forming

- Added the ability to set the maximum element size in the quadrilateral mesh generator
- Improved the accuracy of the input contour used in quadrilateral mesh generation
- Improved algorithms of the quadrilateral mesh generator
- Fixed an error that caused the results of the “Forming Limit Diagram (FLD)” subroutine calculation to appear only in the first operation when executed in a sequence of operations
- Fixed an issue with solution convergence
- Improved the calculation algorithm for instantaneous workpiece rotation
- Fixed the bug that occurred in simulations with the implicit integration method and disabled remeshing
- Fixed the bug that caused hexahedral mesh degradation during volume restoration

Longitudinal rolling

- In the “Longitudinal Rolling” and “Reversing Rolling” operation types, the dual mesh method for the workpiece is now used by default
- Fixed an error that caused an unexpected stopping of simulation when simulating the longitudinal rolling process with two symmetry planes
- Fixed the bug where parameters from a previously set pass table were retained when changing the operation type from “Reversing Rolling” to “Longitudinal Rolling”
- Fixed an issue that caused an unexpected stopping at the start of the simulation in the longitudinal rolling module with elastic-plastic deformation
- Fixed the cause of unexpected stopping of simulation that occurred in some cases when using the dual mesh method

Cross rolling

- In the “Cross Rolling” operation type, a single mesh for the workpiece is now used by default

Extrusion

- Improved overall accuracy of temperature calculations
- The “Notify when load exceeded” parameter has been moved from the “Simulation Parameters” tab to the “Extrusion” tab
- Added extended report template for automatic report creation
- Fixed a bug related to the application of the template for bearings defined by the igs-contour, as well as the issue with chokes assignment through template in the Bearing editor

- Fixed the cause of the error “Die set is not fixed” when calculation of any billet after the first billet in the task type “Whole billet length simulation”
- Fixed incorrect visualisation of objects created by the “Billet skin analysis” and “Back-end layer analysis” subroutines when their visibility was changed
- Fixed the bug with assigning ram velocity for filling stage from process template

Heat treatment of extruded profiles

- Added the stop condition “Minimum final profile length”
- Fixed some errors in the operation of stop conditions and improved diagnostics of specified stop conditions when starting the simulation
- Fixed an error where a tracing point created inside a near-surface element moved to the profile surface when tracing was started

Grain size evolution

- Fixed the incorrect calculation of static recrystallization when considering the elastic-plastic deformation of the workpiece
- Fixed the bug that caused incorrect calculation of the “Grain Size Evolution” fields when remeshing was enabled

Diffusion

- Fixed the bug that occurred in a 3D operation when a workpiece inherited from a 2D operation with diffusion fields

QForm UK 11.1.0

05 August 2024

What's new

Different interface capabilities

- Added the ability to paste values from the clipboard into tables of tabs “Blows”, “Passes”, “Billets”

Results view window

- Improved object scaling with command “Zoom to fit” in cases when section planes or slice planes are active
- Fixed the picking bug where all objects disappeared in the results viewing window, and a red cross appeared over the object tree

Work with simulation objects

- Fixed incorrect scaling of geometric objects when loading them directly from *.step files. Improved the *.step file loading dialog process
- Fixed the incorrect scaling of objects in the results viewing window when loading 2D geometry
- Fixed an error where the user name of the object was not saved after its 3D revolving from a *.dxf-file

Diagrams

- When loading data from a file into the “Graphs” window, the file name from which the import was made is added to the function name displayed in the legend“

Processes and operations

- Now, when creating the next operation in the sequence by copying the initial data from the previous operation, the value of the “Volume Change Coefficient” parameter in the “Workpiece Parameters” tab is not copied and is set to one
- Now, when creating the next operation in the sequence, the “With elastic-plastic deformation” parameter is activated by default if it was activated in the previous operation

Import and export

- Improved geometry import from *.dxf files: now if the #INSUNITS parameter of the loaded file is 0 (Unitless), the \$MEASUREMENT parameter (units system) will be ignored, and unitless values will be assigned inches or millimeters depending on the unit system selected in the program settings
- Fixed the incorrect export of the workpiece surface to an *.stl-file when symmetry planes are used in the simulation and the “Symmetry” display mode is enabled on the toolbar
- Fixed an error where the simulation did not start with the workpiece geometry imported from a *.csv3d-file, whose mesh was parametrically created from

hexahedrons and tetrahedrons based on hexahedrons. The import error also occurred for *.unv-meshes of the workpieces from hexahedrons.

Reports

- The report is now saved by default in the directory of the *.qform-file for which it is generated

API

- Added functions for getting and setting number of cores used in current QForm window
- Added the function for generating a quadrilateral mesh
'geometry_generate_quad_mesh'
- Added function "extrusion_ports_section_z" that returns z-coordinate of the plane crossing all the ports in operation type "Extrusion"
- Added possibility to activate slice mode for section functions
"section_plane_create_3p" and "section_plane_create_pn"
- Added API function "view_overall_dimensions" to get height and width of the overall dimensions frame of the displayed objects
- Added the function `zoom\_to\_frame`, which fits the displayed simulation objects into the results viewing window without margins. The scale argument allows proportional scaling of the displayed objects relative to the boundaries of the results viewing window
- Added API function for exporting section contour in dxf format -
`export\_section\_contour`
- Added functions for creating, deleting, and getting the ID of a spring between tools:
section `Springs between tools`
- The logic of "operation_copy" function has been improved. Two new functions have been added.
- The console window does not appear anymore when using user applications in Windows 11
- Added a `\_\_bool\_\_` method in the QFormAPI.BoolValue class. Now it's possible to use instances of this type directly in conditional statements. Instead of writing `if ret.value:` you can write `if ret:`.
- Resolved an issue where the function of getting the process name was returning an empty string
- Resolved an issue preventing external code editors from invoking the load graph function on ram and container components in operation type "Extrusion"

General simulation conditions and capabilities

- In the "Electrical Upsetting" module, in simulations with alternating current, the value of relative magnetic permeability is now taken from the workpiece material model

- Improved the handling of single contact nodes
- In the “Electro Upsetting” operation type, the parameters “Maximum Temperature Change” and “Constant Time Step (Thermal)” have been removed from the “Simulation Parameters”
- Improved the algorithm for unloading a compressed spring
- Removed the ability to set variable parameters for initial simulation data from the program
- Improved the stop condition “Maximum calculation time”. It is now possible to set a time limit for either a specific operation or any blow.
- Fixed the bug where, in hammer forging simulation with the “Solve all blows” parameter active in the “Strokes” tab, the upper tool penetrated the lower tool if the specified “Distance” stop condition was already reached in the previous stroke
- Fixed the bug where the “Gurson-Tvergaard-Needleman” plasticity condition specified in the workpiece material parameters was not considered in the simulation
- Fixed the bug in simulation of cyclic tool heating when using an assembly tool
- Fixed the bug in volume constancy of the workpiece obtained by rotating a 3D-sector relative to symmetry planes using the “Cyclic Rotation” function
- Fixed the bug where heat generation from friction was not considered in the “Cyclic Tool Heating” simulation
- Fixed the bug in calculating the coupled thermal problem when using a hexahedral workpiece mesh
- Improved the algorithm for rotating an inherited 2D workpiece between two planes of symmetry in a 3D operation
- Fixed the bug in the “General” Coupled tools simulation when using multiple workpieces

Boundary conditions

- The boundary condition “Surface Temperature” has been renamed to “Temperature”. It is now possible to set the temperature as a function of time not only for surface nodes of the workpiece but also, optionally, for all nodes of the workpiece within a specified box
- Now, when creating a continuation of operation as a copy of the previous operation, the initial position of the boundary condition areas is taken from the last simulated record of the previous operation
- Fixed the incorrect movement of the tool boundary condition area during the coupled simulation when the boundary condition area is copied from the previous operation and the tool is inherited

Diagnostics

- Added diagnostic messages indicating that using a dual mesh or multishift step in the calculation is incompatible with the implicit solver

- When starting a simulation, the direction vectors of tool movement specified in the “Distance” stop condition are checked to ensure they are collinear

Databases

- Fixed the bug causing the open database window to remain attached to the operation in which it was opened, even after switching to another operation
- Fixed the bug in importing deformable material into the database from a *.qdat file when the flow stress is described by a Lua subroutine

Tracking

- Fixed an error where the tracing calculation did not stop when the “Pause after finishing current step” option was selected

Subroutines

- The simulation of the built-in subroutine “Stress Tensor” is now possible for porous material deformation processes
- Added the variable 'v_slide' (slip speed) to the list of variables available for Lua tool subroutines

FE-Mesh

- Changed the default value of the tool mesh parameter “Minimum Number of Elements per arc 90°” to 2.5
- Improved the algorithm for adaptation guidance by the specified strain gradient
- The influence of the “Minimum Number of Element Layers” parameter on the workpiece mesh density is no longer limited by the specified maximum adaptation value or the minimum element size of the workpiece
- Improved the structure of the workpiece and tool mesh parameters in the “Simulation parameters” tab
- Now, when recalculating any operation from the beginning, the program defaults to offering to recreate the tool meshes in that operation. In operations following the recalculated operation, the tool meshes are always remeshed
- Fixed the incorrect operation of the adaptation factor for the tool mesh
- Fixed some errors in the generation of the initial volumetric mesh of the tool
- Fixed the bug where the local tool mesh parameter area affected not only the specified tool but also all tools within it
- Fixed the bug where the “Minimum thickness of material” parameter did not work in the “Workpiece mesh” section

Longitudinal rolling

- Improved the structure of the Stop conditions tab in the Longitudinal, Reverse, and Cross rolling modules
- Improved the functionality for adjusting the gap between rolls in the “Reverse rolling” module. Now the gap is adjusted only by moving the top roll, while the bottom roll remains stationary.
- In the Longitudinal, Reverse, and Cross rolling modules, the built-in stop condition “Minimum share of free surface” has been replaced with “Workpiece exit from stand”
- Fixed an error in the “Reverse rolling” module where, when using a three high mill stand, one of the rolls in contact with the workpiece did not rotate. The error occurred on the second and subsequent passes when the workpiece moved vertically.
- Fixed an error that caused an unexpected stopping of the simulation in the “Reverse rolling” module when using a dual mesh method and a horizontal plane of symmetry
- Fixed an error that caused excessive cooling of the rolls when not in contact with the workpiece in the “Reverse rolling” module with the “Simple” heat transfer to workpiece option enabled
- Fixed the bug where the automatic trimming of the workpiece was not performed in the “Reversing Rolling” module

Ring/Wheel Rolling

- Incorrectly set axis of axial rolls is now corrected automatically on the first step of the simulation
- Fixed the incorrect convergence of axial rolls when setting tool kinematics using “Mandrel Speed/Ring Height”

Extrusion

- Reworked wording in the “Model preparation template”
- Significantly reworked wording and command names in QShape
- Fixed typos in the QShape template
- Improved functionality of automatic geometry preparation of *.step-file for projects which have symmetry planes. For such projects, it is recommended to assign pressure ring as inner diameter value, not an *.igs-contour.
- Fixed an error of export data template for automatic geometry preparation
- Fixed the incorrect occurrence of the “Encounter improper argument” error in QShape when generating the surface mesh of the workpiece for some cases

Heat treatment of extruded profiles

- Fixed the issue of switching to the next process in batch mode

QForm UK 11.0.2

09 April 2024

What's new

Different interface capabilities

- Added a command to delete only all of the unpinned elements in the Recent Files and Recent Folders collections, which are displayed when a new application window is opened
- Fixed the problem with assigning of stop conditions for inherited assembly tools

Work with simulation objects

- Fixed the cause of program crash when deleting tool or workpiece objects in the tree at the same time with a boundary condition set for them
- Fixed incorrect functioning of the “Delete” command in the right-click menu when clicking on the “Assembly Tool” line in the object tree and in some tabs of the source data panel
- Fixed incorrect copying of a workpiece or tool with a specified local box of boundary conditions: the local box of the copied workpiece or tool lacked properties and a serial number

Diagrams

- Fixed incorrect graph output for the stop condition “Axis 1(2) - tool rotation” in the “Stop conditions” tab of the source data panel

Measurements

- Fixed an error that led to the application crash in some cases during measurements on the symmetry plane

Multiwindow mode

- Fixed an error that caused a program crash when working in multi-window mode. The error occurred when closing one of the windows working with two different projects open in separate windows.

License

- Enhanced the stability of network license detection

Special

- Added documentation (Help) in Japanese language

API

- Added API function “extrusion_bearings_z” which makes possible to determine minimum and maximum Z-coordinate of bearings surfaces
- Added API commands “section_plane_enable” and “section_plane_show” to activate/deactivate and hide/show the section plane.
- API functions for setting and getting the view of objects by two vectors: “camera_direction_set” and “camera_direction_get”
- Added two corresponding types, “MeshAdaptationTool” and “MeshAdaptationWorkpiece,” for the local boxes of the workpiece and tool mesh specified in the “Simulation Parameters” tab
- Improved work with tabular data via the QForm API for Python

QShape

- Fixed issue with opening IGES-files in QShape

General simulation conditions and capabilities

- Added the capability to set an axis for an assembly tool
- The 'Arbitrary' drive type has been added. This option allows complex kinematics of tool movements to be defined.
- Added the ability to set additional friction conditions between specified workpieces if there are more than two workpieces in the simulation
- Now, in the calculation of electrical upsetting, the default specific electrical resistivity of the workpiece is taken from the deformable material model. If the electrical resistance is not specified in the material model, it is to be calculated using the Wiedemann-Franz law.
- Improved coupled task algorithm calculation for assembly tools with fittings
- Improved the simulation step selection algorithm for calculating elastic-plastic problems with a spring-loaded tool
- In “Cooling/Heating” operations, a contact problem is now solved if needed, when objects come into contact with each other due to thermo-elastic-plastic expansion

- Now, when the calculation is started for continuation, the simulation begins with the last calculated record of the active operations chain, regardless of which operation is active at the moment of launch
- Fixed the issue of workpiece nodes penetration into the junction of two parts of an assembly tool when using the “Separate” model of coupled deformation
- Fixed incorrect operation of the “Load holder” drive type with a maximum speed limit and the “Universal” drive type, where the feed is set through load with a maximum speed limit.
- Fixed a bug that led to volume loss in the workpiece during multi-blow processes using a dual mesh
- Fixed some errors in the deformation calculation algorithm and the thermal problem solution for multiple workpieces in contact with each other using the dual mesh method
- Fixed issues with the simulation of a multi blow open die forging operation incorrectly stopped when transitioning to the next blow if the stop condition set for the active blow had already been achieved or could not be fulfilled
- Fixed an issue with the incorrect rotation of an inherited 2D workpiece in a 3D operation between planes of symmetry, when the 2D workpiece in the 3D operation is manually positioned at an angle to the axis of symmetry

Boundary conditions

- Fixed an issue where a specified environmental box didn't impact a workpiece's surface element if any of its nodes were outside the box. Now, the box works if at least two nodes of the element are within the box.
- Fixed an error that caused the local area of the environment crush when there were several workpieces in the simulation

Diagnostics

- Added diagnostics when starting a simulation with the “Field value” stop condition: it is now required to additionally create the “Time” stop condition
- Improved diagnostics of set stop conditions when using a tool with the “Mechanical Press” drive type
- Fixed a bug where the parameters of a deformable material of the “Mixture” type were incorrectly checked at the start of the simulation if data for the “Homogeneous” material type had been previously set in the material model
- Fixed an issue that caused simulation with assembly tool not to run as a result of incorrect source data validation

Simulation log

- Fixed an error where the numbering of operation blowes in the corresponding log files started from zero

Subroutines

- Added “coord” output fields for corresponding coordinates to the standard subroutine “Cylindrical Coordinate System”

FE-Mesh

- Implemented a new algorithm for creating the tool mesh at the start of the simulation: the surface mesh of the tool is now created taking into account the Delaunay criterion, which, in turn, improves the quality of the tool's volumetric mesh
- Optimized the number of workpiece remeshing during simulation, resulting in increased simulation speed
- Implemented restoration of the quadratic nature of the original 2D contour. If the loaded 2D geometry from a *.dxf- or *.crs-file contains radii described by a set of segments, the program converts them into a set of arcs. This solves the problem of adaptive generation of the original mesh for such cases.
- Improved the logic for remeshing thin-walled workpieces
- Improved the algorithm for projecting nodes of the finite element mesh from one workpiece onto the surface of another workpiece.
- Improved the tool mesh generation algorithm when using a local box that affects only on surface
- Fixed an error where the “Only for surface” parameter for local mesh adaptation did not work for the workpiece and tool
- Fixed a bug in workpiece trimming when using two trimming surfaces simultaneously
- Fixed an issue that occurred during the recalculation of operations with preliminary gravitational positioning of the workpiece. If the “Remesh tools” option was not selected, the tool's mesh adaptation would fail to align correctly with the workpiece
- Fixed a bug in trimming multiple workpieces when using a dual mesh
- Fixed the error of incorrect nodes numbering of the workpiece mesh during several workpieces usage in the simulation
- Fixed the issue where the box settings for the workpiece mesh didn't work correctly if a time duration for the box's effect was specified
- Fixed a bug where the tool mesh parameter “Adaptation factor” did not affect the adaptation of the tool's internal nodes

Sheet-bulk forming

- Improved the algorithm of the quadrilateral mesh generator
- Friction conditions have been added to the standard Lubricants database for sheet metal forming simulation
- In a simulation with several workpieces, it is now possible to select the workpiece for which the subroutine calculation results are to be displayed in the “Form Limit Diagram” window
- Now, if there are more than one workpiece made of different materials in the simulation, when starting the “Form Limit Diagram” subroutine, the corresponding diagram must be set for at least one of the workpiece materials used, not for all of them, as it was before

Longitudinal rolling

- Added the ability to simulate elastic-plastic deformation of the workpiece in the longitudinal rolling modules with certain conditions
- Fixed an error in the “Reverse rolling” module that caused an unexpected simulation error during the pre-cooling of the workpiece
- Fixed an error in the “Longitudinal rolling” module that caused the program to crash when starting the simulation with a workpiece expanded over symmetry planes
- Fixed an error that caused the workpiece mesh to break when simulation in the “Longitudinal rolling” module using user-defined guide and volume constancy enabled

Ring/Wheel Rolling

- Modified the volume constancy algorithm for the simulation of closed ring rolling

Extrusion

- Added the ability to read a key phrase from a STEP file to automatically add specially colored faces in the CAD system to the “Denied for automatic correction” list when loading geometry into QShape.
- In the “Additional Fields” section of the “Simulation Parameters” tab, an option called “Vector Fields for Displacement Components” has been added, which includes vector displacement fields along the X, Y, Z axes in the list of fields calculated for the tool
- Option to add a section plane on bearing using right-mouse click on simulation object
- Result of “Deny automatic correction” function is now saved to the file modification history
- Added *.iges extension in addition to *.igs for the support tools in the “Model preparation template” window

Heat treatment of extruded profiles

- Possibility to consider weight of profile in “Simulation parameters” tab
- Possibility to add Adaptive time step value based on specified maximum temperature change
- Added possibility to use tracked points at 2D-stage of simulation and add graphs for these points
- Added the option to assign environmental boundary conditions separately on the internal and external surfaces of the profile
- Stage of the process is named “Stage” instead of “Blow” on simulation control panel

Grain size evolution

- Fixed an error due to which graphs in the database of Deformed materials for the microstructure evolution model were not automatically rebuilt when model parameters were updated
- Fixed an error that caused the specified initial accumulated deformation was not taken into account at dynamic recrystallization processes simulation

QForm UK 11.0.1

19 December 2023

What's new

Object positioning

- Corrected an error that in some cases led to the crash of the software when deleting an object in positioning mode
- Fixed incorrect representation of object positioning history when opening projects created in earlier versions of the program
- Corrected an error that caused the “Put in contact” and “Gravitational Positioning” tabs to remain unavailable when switching from the simulation results mode to the initial data mode in the positioning mode

Measurements

- Corrected an error that caused the “On Section Plane” tab in the “Measurements” window to be inactive in cases where the section was activated by the user after opening the “Measurements” window

Setting initial data

- Fixed a bug that prevented specifying coordinates for the “Point 1” parameter by double-clicking the mouse for the “Distance” stop condition
- Fixed a bug that caused the program to crash when applying an operation template

Import and export

- Fixed the bug causing program to close in case of overwriting existing geometric objects when loading new objects from *.qmesh2d

Special

- The user manual has been significantly supplemented and updated

API

- New API commands in User Interface and QForm

General simulation conditions and capabilities

- Corrected an error due to which the automatic put in contact of an assembly tool with the workpiece was not always carried out
- Corrected an error that caused the simulation of a multi-blow process to stop when transitioning to the next blow in cases where the “Final Position” stop condition was used
- Corrected an error due to which, when using the “General” type of coupled deformation task, there was no friction between the tools
- Corrected an error that caused the “Distance” stop condition to be erroneously considered as achieved in a multi-blow process, leading to the simulation of the next strike starting
- Fixed the bug where specifying an additional record for the “Distance” stop condition could cause the simulation time step to be excessively small
- Corrected an error where, in the simulation of coupled deformation of assembly tools, the calculated fields did not appear in the “Tool Fields” section
- Corrected an error that resulted in the temperature not being updated for internal nodes of the workpiece in all processes with two meshes and/or multi-step shifting, and incorrect projections of nodes were found during shifting
- Corrected an error that made it impossible to start simulations of operations of the type “Cyclic Tool Heating”

Boundary conditions

- Corrected incorrect names of parameters of cone box in the “Box Parameters” section

Diagnostics

- Improved diagnostics for resuming a simulation in which, after a forced stop by the user, the values of the stop conditions “Distance” or “Tool Stroke” were changed for a tool with the drive type “Mechanical Press”

Simulation log

- The option to output debug information to the log has been removed from the program settings

Tracking

- Corrected an error that caused incorrect line tracing when using the implicit method in calculations
- Corrected an error that caused the displayed position of the traced point to shift, specified for the tool in the last record after simulating coupled deformation using the “Stress State Only” and “Separate” models

Subroutines

- Fixed the error that caused “Fatigue DB” subroutine calculation results to contain only zero values when using an assembled tool
- Corrected the cause of an error at the end of the simulation of a deformation process, in which the flow stress of the workpiece material was described by a Lua-subroutine

FE-Mesh

- Now, when selecting a row with the name of the local mesh parameters area in the “Workpiece Mesh” and “Tool Mesh” tabs, the corresponding box is highlighted in the results viewing window
- In the “Workpiece mesh” tab, additional parameters of the “Prohibit increase in element size” block have been removed
- Corrected an error that caused copied local “Mesh Parameters” areas to be assigned the sequence number of the copied area
- Corrected some errors in the “Trimming Surface” feature

Induction heating

- Fixed the bug that caused incorrect parameter values to be taken into account during simulation when power and frequency specified for the “Inductor” boundary condition were specified as a table

Longitudinal rolling

- Fixed an error, when local temperature fluctuations occurred after trimming the workpiece
- Fixed an error where the workpiece could be positioned between the rolls at the second step of the simulation
- Corrected an error that caused the program to crash when starting a simulation if there was an operation in the project with the active option “Three high mill stand”

Extrusion

- Option to add cooling channels in QShape
- During the simulation, a notification about exceeding the maximum load appears in the log and in the “Simulation Status” tab, if the “Issue message upon reaching force” parameter is activated in the “Simulation Parameters” tab and the value of this force is entered
- Handling of zero values of ram velocity in case its set as tabular dependence on time
- Eliminated the possibility of adding a graph for workpiece by clicking on profile front-end
- Fixed some errors and improved algorithms for automated geometry preparation using the “Model Preparation Template” interface
- Fixed an issue with the Ram stroke value that has been considered as Butt-end length for current billet in case of Whole billet length simulation
- Fixed filling time value displayed on simulation control panel
- Fixed the problem of extrusion simulation with tapered temperature of container
- Fixed bug that caused incorrect Seam length field display

Grain size evolution

- Arranged the fields of the subroutine “Grain size evolution”. Now the field names and their order are the same for processor and postprocessor simulation.

QForm UK 11.0.0

18 October 2023

What's new

Different interface capabilities

- Added the capability to clear lists of recent files and directories, delete or pin individual items in these lists
- Improved the “View” section of the main menu
- Accelerated the graph plotting process for all blows and improved the visualization of the view cube in multi-impact processes
- Fixed an error leading to program crash as a result of switching the interface language from English to any other language and subsequent switching of the operation or process of the opened project
- Fixed the tooltip error in the scale palette after switching from a selected palette to “Auto”
- Fixed the black coloring of the results viewing area when calculating subroutines in the program's minimized window mode
- Fixed program crashes when a file is opened from recents with an open DB window
- Fixed some errors when changing the interface language in the program settings

Object positioning

- Improved toolbar options - “Pan mode” and “Rotation mode” are now deactivated when positioning mode is activated
- Improved the logic for selecting objects in the “Gravitational Positioning” tab
- Assembly tools are added to the gravitational positioning tab
- Corrected an error due to which the positioning history was not updated when clicking the mouse in the results viewing area after changing the position of an object using the handle
- Fixed an error, due to which it was impossible to position an object relative to the inherited axis
- Fixed an issue where the object movement handle disappeared when interacting with it in the object tree area

Results view window

- Added the capability to snap the cursor to finite element mesh nodes when analyzing simulation fields
- The ability to hide or display axes for selected objects has been added
- Added the ability to copy display settings of objects from the active operation directly to all operations of the project
- Added the ability to configure the display of names for all types of simulation objects
- Added the ability to specify alternative names for all types of simulation objects
- Added a possibility to assign custom color for any object by right mouse button click
- Snapping to nodal points of 2D-contours with pressed Ctrl key in the source data mode is implemented
- The edges of geometric objects in the results viewing window are now black in color
- Changed the visualization of object transparency
- Expanded the capabilities when working with the object tree
- Expanded the list of commands when working with the right mouse button
- Fixed incorrect functioning of the view cube after its 45-degree rotation using the Ctrl key
- Fixed issues where some commands in the object tree and on the toolbar were not executed or available when selecting an assembly tool

Work with simulation objects

- Added Right button mouse click commands for the objects in the “Geometry”, “Boundary conditions”, and “Tracked points, lines” tabs
- Added the “Convert to tools” command in the “Geometry” tab. It appears when one or more unconverted objects are selected in the list of loaded objects
- Added a possibility to create a workpiece with internal cavities by geometrical subtraction of one workpiece from another
- Improved the “Auto detect” function for symmetry planes. Now this function can only add symmetry planes, but cannot remove them.
- Eliminated the possibility of replacing a part of the inherited assembled tool
- Creation of a parametric geometry is available only in the source data preparation mode
- The parametric geometry object is now automatically selected after its creation
- Added the “Create Composite Tool” command in the “Geometry” tab of the source data panel when one tool is selected
- Fixed an error, due to which in some cases the “Parametric Geometry” command was inactive in the “Geometry” tab of the source data panel.
- Fixed the error which caused the selection of two objects when choosing one of the objects loaded from two different *.stp-files
- Fixed the error that caused the alternative name of a parametric geometry object to reset when changing its dimensions

- Fixed the appearance of hidden domains when discarding changes made in parametric geometry
- Fixed an issue where the face of an object for which a symmetry plane had been assigned remained shaded in yellow after the object was moved relative to that symmetry plane
- Fixed incorrect rendering when replacing the geometry of an object in 2D-operations

Section planes

- Added the command “Show only section objects,” which becomes available in the right-click menu when clicking on a section, provided that the section is active
- An alternative option for positioning the selected section plane in a special window has been added, which can be invoked by right-clicking on the section plane
- Added the ability to define a dynamic cross-cutplane that moves with a selected trace point or with a selected tool
- The coordinate system of the section exported to a *.dxf-file now matches the local coordinate system of the section plane
- Implemented proper rendering of the finite element mesh section
- Upon project opening, all rectangles of the created sections are hidden by default
- Improved the section export: only visible objects are exported now
- Improved the algorithm for creating a section array
- The section planes and their settings defined for the active operation are now set by default for all operations in the project. Additionally, you can optionally link the selected section plane only to the active operation using the right-click menu command. In this case, the plane will not be used in other operations in the project
- When bodies are selected, a cross-cut section is created at the center of their bounding box. When no bodies are selected, it is placed at the origin of coordinates.
- Information about the section planes, their positioning, and settings is saved in the “view” file in the calculation results directory (*.data)
- Positioning of section planes is not saved in the positioning history
- Fixed the error of exporting cross-sections in *.xls and *.xlsx-files
- Corrected the incorrect display of a section of a parametric geometry object during its creation

Diagrams

- Added the ability to construct a graph along line for a closed edge
- Added the ability to import data from *.xlsx-, *.xls-, *.csv-files into the graph window
- Added the ability to create graphs for the workpiece volume, number of nodes and elements in the workpiece mesh, calculation step size, duration of step, blow, and operation

- Enhanced algorithms for defining a line on the surface and edges of a body when using the “Show graph along line” command
- Added the capability to create a graph for the workpiece or tool using the right-click command in the object tree
- Corrected the program errors in the smoothing of the “Function Graph Along a Line”
- Fixed interface errors in the “Graph along line” window

Measurements

- Enabled the capability to toggle the overall dimensions frame, describing the projection on the screen plane of all displayed workpieces and tools
- Added the ability to display a scale grid in the results viewing window

Statistics

- The statistics window can now be minimized
- Added the path to the project and the name of the selected operation to the head of the statistics window
- The histogram range in the “Statistics” window now adjusts to the enabled “External Field” option when using the scale in “Discrete Fringe Plot” mode
- Bar colors in the statistics window now change simultaneously with the set scale parameters
- Replaced the “By nodes” and “By elements” options with “By volume” and “By surface” for the statistics window
- In the “Statistics” window, when using section planes, you can optionally display statistics for the active section contour. You can choose to display statistics for the entire object or only for its visible part.
- Fixed mismatch between the color of the bar in the statistics window and the color of the corresponding scale interval

Images and animation saving

- Added an option to hide/show the blow number in the “Images and animation saving” window

Multiwindow mode

- Now, when switching between windows in the multi-window mode, the active tab of the source data panel remains unchanged, even if different projects are open in the windows
- Fixed an issue where the statistics window did not automatically adjust to the active process in MultiView mode

- Fixed an error that caused the program to crash when closing one of the windows in the multi-window mode of viewing results, for which objects graphs were built.
- Fixed an error of closing the program after exiting the multi-window mode and clicking on the operation in the project structure
- Corrected some synchronization and linking errors when working in multi-window mode

Processes and operations

- Added the capability to select multiple processes using the Ctrl or Shift keys for simultaneous deletion
- Added an option to display the project structure in the workspace in the form of combo drop-down lists. To use the feature, you must activate the corresponding item in the settings.
- When deleting an operation, the “Delete all subsequent operations” option is deactivated by default
- Corrected an error that allowed for the deletion of operations in the “Project Structure” window during the simulation

Setting initial data

- Improved source data panel experience. After creating a new operation, the “Operation” tab is no longer displayed on the source data panel, and operation settings are accessible in the “Project” tab.
- Clicking on the active tab of the source data panel now hides the source data area, and clicking it again displays it once more
- In the “Workpiece parameters” tab, the Material field now displays the inherited material from the previous operation. The “Temperature” and “Accumulated Strain” fields show the text “Inherited.”
- Fixed the issue where it was not possible to set the coordinates of the Stop condition “Distance” by double-clicking in a 2D calculation

Import and export

- Moved the ability to export *.unv- and *.ntl-files containing object meshes from the “Geometry” tab of the source data panel to the section in “Main menu - Export”
- Added a warning when trying to export multiple objects to *.csv2d/*.csv3d-files
- Improved the “Export” item in the main menu

License

- When working in the Viewer mode, you can no longer define or edit initial data for simulation

Special

- Added a reproducibility mode, ensuring identical modeling results when recalculating the same project in the same version of the program
- Added a possibility to set the number of simultaneously used threads for simulation. Now user can set and keep the number for all new program windows, as well as for the current program window only.
- Support for the Windows 7 operating system will be discontinued in future versions
- Opening old projects with the *.qfm extension is no longer supported. To open and resave *.qfm-files as *.qform-files, use version 10.3.1 of the program or earlier versions.
- The maximum number of threads that can be used during a calculation now corresponds to the number of CPU cores even in “Hyper-Threading” mode, as this mode has no effect on the performance of calculations

API

- A new tab “Docs” has been added to the “Applications Wizard” containing a short description of the selected function, its arguments and license requirements
- Access to the field values of standard subroutines has been added
- In the “App Wizard”, a new API command ``sym_plane_create_auto`` has been added to the “Symmetry Planes” section
- In the “Main menu - Applications” section, a command called “Export Operation Parameters” has been added. This command generates a *.scm-script for the active operation, containing a sequence of API commands. It also exports all geometric objects in *.csv3d- or *.csv2d-files and database items specified for this operation (not from the standard database) to a separate directory. Using the saved set of files, you can recreate the exported operation in a new program window by running the *.scm-script with the “Run Application” command in the “Main Menu - Applications” section.
- Added error handling functions: ``exceptions_disable``, ``exceptions_enable``, and ``exceptions_enabled``. Use the functions ``last_error``, ``last_error_at_function`` and ``last_error_clear`` to obtain error information.
- Restore the connection to QForm by the ``qform_reconnect`` function
- Added connection status check functions: ``qform_status``, ``qform_is_running``, ``qform_is_attached``, ``qform_is_detached``, ``qform_is_closed_by_user`` and ``qform_is_started_by_api``
- Added functions to obtain information about running QForm sessions: ``session_list``, ``session_info`` and ``session_info_by_id``
- Added a connection indicator below the start simulation button. The indicator is displayed when a user program is actively connected.
- API commands for exporting isolines in 2D- and 3D-operations to *.dxf-file
- API commands have been added to initiate calculations in client-server mode

- Now when you invoke the “Add property...” commands from the context menu, the “App Wizard” is opened if it was not opened earlier
- New API commands for keyboard and mouse imitation in the “User Interface” section
- Added the ability to restore connection with the software when working in Excel using VBA language
- Improved the QForm connection method. Use the function ``qform_dir_set`` to specify the directory where the QForm program is installed. Use the ``functions qform_start``, ``qform_attach``, ``is_started_by_qform`` and ``qform_start_or_attach`` to start and connect to QForm, and the function ``qform_attach_to`` to connect to a running QForm session with a specified ID. Use the functions ``qform_close``, ``qform_detach``, and ``qform_close_or_detach`` to close and disconnect from QForm.
- Now, colors for finite elements and faces can also be imported from *.csv3d-files. This capability allows setting up symmetry planes and surface boundary conditions for the mesh imported from a *.csv3d-file using the API
- The functions ``section_plane_set_3p`` and ``section_plane_set_pn`` have been renamed to ``section_plane_create_3p`` and ``section_plane_create_pn``, respectively, and an error has been corrected due to which it was impossible to create more than one section plane using these functions
- Fixed an error due to which it was impossible to close the Python installation directory selection window in the program settings
- Corrected errors that caused the functions ``active_field_get``, ``assembled_tool_get``, ``async_calculate_tools_coupled``, ``operation_copy``, ``operation_insert``, ``subroutine_create``, ``domain_create``, ``sym_plane_create``, ``sym_plane_create_by_face_color``, ``calculate_tools_coupled``, ``export_screenshot`` to work incorrectly
- The functions ``collection_items`` and ``collection_clear`` have been removed
- The functions ``stop_cond_get``, ``section_plane_set``, and ``system_of_units_set_for_program`` have been hidden but will continue to work in previously created API programs
- The function ``system_of_units_set_for_program`` has been removed, and its functionality has been transferred to ``system_of_units_set``
- Added missing class attributes to Python and VBA
- Fixed issues with certain API commands not functioning correctly

General simulation conditions and capabilities

- Added the put in contact method “Moving backward sync,” in which all tools move the same distance provided that at least one of them makes contact with the workpiece, while the others do not intersect with the workpiece
- Added the capability to specify a fixed spatial axis for the workpiece that does not get attached to the workpiece's center of mass during the simulation of multi-impact operations

- The maximum temperature change per simulation step can be set in the Simulation Parameters tab
- Added the ability to perform coupled tools simulation for rotating tools
- Added the ability to locally specify the initial relative density of the workpiece for porous material
- Changed the interface for specifying the spring between two tools in the “Tool Parameters” tab
- Changed the algorithm for calculating the simulation progress. Progress is based on the values specified in the 'Stop Conditions' tab. If the equipment stops prematurely due to a lack of force or energy, the simulation progress will not be 100%.
- In the “Tool Parameters” tab of the source data panel for the “Tool by Tool Movement” option, the ability to select tools that should interact with other tools during the calculation has been added. By default, all tools defined in the operation are selected.
- Added the ability to calculate the combined gravitational positioning of two workpieces
- Added consideration of contact between multiple workpieces when calculating elastic unloading. Separation of the workpieces from each other is not allowed.
- Optimized the algorithm for solving the thermal problem in the tool in the modules “Ring/Wheel rolling”, “Longitudinal rolling”, and “Cross rolling”
- Added accounting for the elastic strain increment during time step calculation. The stability of the choice of the time step value at the initial moment of deformation has been increased.
- More stable simulation of coupled simulation tasks when elastic-plastic workpiece deformation is enabled
- Improved the logic of the “Axis 1 - Tool Rotation” stop condition
- The temperature field of the workpiece is now displayed in operations with the thermal calculation disabled
- Fixed the cause of the calculation stoppage with the boundary condition “Sprayer BD”, for which a constant heat transfer coefficient is specified
- Fixed errors in the functioning of additional calculation records, set in the “Stop conditions” tab
- Fixed calculation of heat generation at the contact during sliding of a non-deformable workpiece
- Fixed interface errors for setting seating parameters for assembly tool
- Fixed incorrect accounting for heat exchange between different parts of the tool in the assembly in the “Cooling/Heating” operation type

Boundary conditions

- Added boundary condition “Surface temperature (point cloud)” to set the temperature distribution on the workpiece surface from a text file

- A new boundary condition for the workpiece called “Surface temperature” has been added. This boundary condition calculates the temperature for the surface nodes of the workpiece during the simulation process.
- Added a warning about the requirement to redefine a boundary condition set by a surface if the geometry or mesh is not identical to the one which the boundary condition was originally created for
- Now, when modifying the parameters of parametric geometry, the boundary conditions set by the surface are automatically deleted. Added a warning in the log about the removal of such boundary conditions.
- Now the box is automatically selected after it is created
- Fixed the incorrect operation of the deactivated forging manipulator in the simulation with two boundary conditions “Forging manipulator”
- Fixed the error that caused a dialog for setting the boundary condition shape area to appear when assigning seating for a composite tool using the right-click menu command

Diagnostics

- A disk space check (< 1GB) has been added to the diagnostic process when starting a calculation, and an error message will be displayed in case of insufficient disk space
- Improved diagnostics when launching a calculation with the “Distance” stopping condition
- If the simulation with a tool, for which the “Mechanical Press” drive type is set, is stopped, and then in the “Stop Conditions” tab the set “Tool Displacement” will be increased or the set “Distance” between tools will be decreased, starting the simulation from the current step will be impossible, and a warning with an explanation of the error will appear in the simulation log.
- If you stop the simulation with the set stop condition “Distance”, change the coordinates of the point for measuring the distance between tools, and start the simulation to continue, a warning will appear in the simulation log stating that the simulation must be started from the beginning for the changes to be considered
- Improved diagnostic checks of model parameter values assigned from databases before starting the simulation
- Extended validation of initial data during simulation startup

Databases

- Introduced a new formula for defining flow stress, incorporating the Ghosh and Hockett-Sherby equations
- Added the capability to disable automatic network database loading
- Added the capability to search in the databases of deformable materials and tool materials by name and chemical composition
- Added the capability to export and import a user database

- Added the ability to paste values from the clipboard into database tables
- Added the ability to specify the heat transfer coefficient in the lubrication parameters dependent on pressure
- Added the ability to specify parameters for the thermomechanical fatigue model in the tool materials database (tool fatigue simulation)
- Updated the “Template” window. The “Rolling parameters” tab was divided into three separate tabs for “Ring rolling”, “Wheel rolling” and “Cross rolling” operation types.
- When starting the simulation, a diagnostic message is displayed if the object from the standard database specified in the simulation file differs from the corresponding object of the standard database of the used version of the software
- Added sprayer standard database
- The unit of measurement for the coefficient of linear expansion in the databases of deformable materials and tool materials has been changed
- Reworked the interface of the sprayer database
- The logic of deleting objects in the phase composition tree is made more user friendly

Tracking

- Added the ability to set alternative names for tracked points
- Changed the structure of the “Tracked lines, points” tab in the source data panel
- Added diagnostics when importing a set of traceable points from *.xls- or *.xlsx-files
- Improved algorithm for importing a set of tracing points from *.xls-, *.xlsx-files
- Added support for importing a set of tracing points from *.csv-files
- Improved the tracing of the lines array
- Improved the algorithm of creating of undersubsurface tracked lines
- Fixed an error that led to the program closing when reloading a set of tracing points from an Excel file
- Fixed incorrect tracing of tool points specified in the “Cyclic Tool Heating” operation type
- Fixed an issue with exporting field values at traced points, which resulted in unnecessary auxiliary calculation fields in the exported file

Subroutines

- Added a “Fatigue DB” subroutine to the list of tool standard subroutines, which performs the calculation of thermo mechanical fatigue of the tool based on parameters specified in the tool material model
- Added a standard subroutine “Pressure Center” for the tools. The subroutine is available in early access mode as the calculated coordinates are saved in a CSV file and are not visualized within the program
- The calculation of Lua-subroutines for a chain of operations is now possible when inheriting results from a 2D-operation into a 3D-operation. If the results of the main

simulation were obtained in a previous version of the software, it is necessary to rerun the main calculation from the beginning in order for the capability to transpose Lua fields from 2D to 3D to become available.

- Added to the directory of the installed program “\lua\samples” examples of user subroutines written in the Lua language
- Added “gartfield_inward” field to the standard “Surface Flow Analysis” subroutine. Calculated field values only grow when the undersurface layer is drawn inside the workpiece.
- Added diagnostic messages about the absence of certain data when launching some subroutines for simulation
- Redesigned the built-in subroutines selection window. Added grouping based on the required license. Added the ability to select multiple subroutines while holding the Ctrl key
- Added the capability to use the results of the standard subroutine “Sliding Velocity” in the users subroutines
- Fixed an error that caused the executing of subroutines and tracking to hang in projects simulated using the Implicit method
- Fixed an error that caused the subroutine “Cylindrical Coordinate System” to fail in some cases
- Fixed the error in calculating the “Damage models” subroutine when using an implicit method in the main calculation

FE-Mesh

- In the workpiece mesh parameters, the option to prohibit increasing the size of elements relative to the mesh obtained at the first step of the simulation has been added
- In the workpiece mesh parameters, the option to prohibit increasing the size of elements in areas where the relative density is less than the specified value has been added
- Added fields for specified mesh adaptation “defined_adapt” and specified element size “defined_elem_size” in the “Element Size” subroutines for both the workpiece and the tool
- In the “Simulation Parameters” tab, in the “Workpiece mesh” section, the parameters “Adaptation due to temperature” and “Adaptation due to strain” have been replaced with “Adaptation due to temperature gradient” and “Adaptation due to strain gradient”, which are set by numerical values. If during the simulation, the gradient of the corresponding field within a single element exceeds the set value, a denser mesh is automatically created in the area of that element.
- In the “Simulation Parameters - Workpiece Mesh”, the “Mesh parameters in contact zone” block has been added. It allows you to specify the properties of the finite element mesh of the workpiece directly in the contact area with the tool.

- Added a new parameter for controlling the FE mesh of the tool, “Minimum number of elements per arc 90-degree,” allowing you to specify the mesh density only for curved sections of the entire tool surface
- Added a new parameter for controlling the FE mesh of the workpiece, “Minimum number of elements per arc 90-degree,” allowing you to specify the mesh density only for curved sections of the workpiece surface that are not in contact with the tool
- Added the ability to use a method of specifying (“Adaptation” or “Element Size”) for describing local parameters of the FE mesh, which is different from the method used to describe the global mesh parameters
- Changed the default minimum tool mesh adaptation value (0.01) due to the modified logic of creating a volumetric mesh in the tool
- Added option to adjust the mesh density along the tangential direction for tetrahedral mesh when modifying cylindrical parametric geometry
- The solver has become even less sensitive to the presence of bad elements on the input surface mesh of the tool
- Improved the interface for workpiece and tool mesh parameters control
- Fixed a bug that caused the right-click menu command “Set to default value” in the “Calculation Parameters” tab not to apply to parameters of the boxes
- Fixed a remeshing error when calculating the “General forming” operation type using a dual mesh and a symmetry plane
- Fixed the issue of the workpiece mesh elements stretching at the contact with the rounded tool

Induction heating

- Added a new field called “Inductor - Specific Power” for induction heating calculations
- Added the ability to specify electromagnetic properties for deformable materials of the “Mixture” type
- If the power or frequency of the “Inductor” boundary condition is specified as a time-dependent table function, then during the simulation, mandatory records are made for all points of the table function
- Added the option “Create adaptation area” for the “Inductor” boundary condition. The adaptation area defines the optimal parameters of the mesh surface for calculations with this boundary condition.
- Added the capability to initiate a simulation if the “Inductor” boundary condition has zero power or frequency when these parameters are specified using a table. This capability is necessary for table-based parameter assignment.
- Material model parameters required for simulation of induction heating are now grouped into a separate branch “Electromagnetic properties” in the database of deformed materials
- Fixed the error that caused induction heating simulation not to enable when two parallel symmetry planes were used

- Corrected the incorrect operation of the “Inductor” boundary condition in simulations with dual-mesh method

Sheet-bulk forming

- Added a quadrilateral mesh generator for 2D contours of arbitrary shape
- Improved the algorithm for preprocessor tool engagement with the workpiece using a hexahedral mesh

Longitudinal rolling

- Added support for a three high mill stand in the “Reverse rolling” module
- Added in the Reverse rolling module the ability to specify the lateral displacement of the upper roll in the “Passes” tab
- Added the ability to perform pre-processing calculations for pre-cooling in the “Longitudinal Rolling” operation type
- In the “Rolling Parameters” tab, the ability to set automatic trimming of the specified workpiece length at the end of the operation has been added. In this case, loading the cutting surface geometry is not required
- Added a check for the presence of tool axes in the reverse rolling module
- Fixed an error in the automatic positioning of the workpiece in the “Reversing Rolling” operation type

Ring/Wheel Rolling

- Added the ability to limit the time step by the maximum angle of ring rotation in one step
- Added the capability for automatic centering of the ring when the guide rolls are not used in the calculation
- The ability to specify the offset of the axial roll pass in the radial direction as a function of time has been added
- Added the capability to calculate the centering force during the simulation using a special formula that takes into account the current thickness, height, and external diameter of the ring
- Added the ability to load the geometry of two tables
- Added the ability to set the movement of the tables at the mandrel speed
- Improved the interface for setting parameters and the logic of accounting for loads and torques when calculating the velocity of the mandrel and axial rolls.
- Improved interface of the “Ring rolling mills” database
- Added the ability to simultaneously plot graphs of calculated and specified Ring growth diameter with a common ordinate axis in the graph window

- Changes in the operation of the virtual table: surface nodes of the ring that are below or at the level of the virtual plate are considered to be in contact ones
- Improved validation of the initial data during simulation startup
- Modified the algorithm for calculating the height, thickness, and diameters of the ring in the ring rolling module

Extrusion

- Added the “Record to clear billet” parameter in the “Billet skin analysis” and “Back-end layer analysis” subroutines, which is responsible for the record at which all points should be removed from the container part of the domain
- Added the ability to set “Heat rate per unit area” for the die set in the “Boundary conditions” tab
- Possibility to consider die set transit time in the “Extrusion” tab
- Additional information with tool set dimensions is displayed in the Simulation state tab
- Added an optional field Material streams borders, assigning a unique number to each longitudinal seam. To calculate this field, the corresponding flag must be set in the Additional Fields section of the Simulation parameters tab before the start of simulation.
- Lua-variable `stream\_border\_id` representing Material streams borders indices distribution
- Option to prepare the mesh for simulation in the background mode uploading the *.stp-file right from the “Geometry” tab during the project creation
- Added the value of distance until stop-mark in simulation state
- Option to assign specific friction conditions for ram and container
- Added the capability to execute “Back-end layer” and “Billet skin” subroutines for symmetrical simulation set ups
- Volume of the metal inside die set cavities is displayed at Simulation state tab
- Additional fields for multi-profile extrusion and Welding quality analysis are added to the “Simulation parameters - Additional fields”
- Added diagnostics of the number of elements by profile thickness
- Added option to set container taper between 2 cross-sections along container length
- Added the ability to specify variable press ram velocity depending on the process time or the press ram stroke
- Diagnostic message while loading geometry file that is not ready for simulation
- Renewed the algorithm of charge weld calculation in case of multi-profile extrusion
- Preprocessing results (0.5 record) contain simulation results at the moment after cut of the billet butt-end and pause between extrusion of subsequent billets. This is applicable to billets following the first one.
- Adjusted the outflow velocity of the profile at the exit with the condition of flow continuity

- Improved algorithm of ram stroke calculation for all subsequent billets. This is applicable to billets following the first one.
- Velocity absolute value distribution is now displayed in m/min
- Improved identification of “Material streams”
- Updated algorithm of progress bar during the simulation
- Improved remeshing algorithm at the stage of coupled deformation
- Fixed incorrect consideration of the “Emissivity” parameter in the heat exchange task between tools and boundary conditions at the tool boundary
- Fixed an error that prevented setting the “Constant Temperature” boundary condition for the tool
- Fixed the calculation of process time on the 1st record for billets following the first one. Now this time corresponds to the billet upsetting time.
- Fixed Ram stroke calculation at the last simulation step
- Fixed the temperature calculation during pause in between billets when different values for different billets were specified
- Fixed the calculation algorithm for the “Billet skin analysis” subroutine when the “Welding quality” subroutine is being calculated simultaneously
- Fixed the bug causing an unexpected crash of extrusion simulation when simulating microstructure evolution in processor or postprocessor mode

Heat treatment of extruded profiles

- Added the current length of the profile in the Simulation state tab
- “Remesh before distortion solving” is now by default enabled
- Fixed incorrect accounting of the heat transfer coefficient in the “Profile Cooling” module, set as a function of temperature
- Warning regarding inability to continue deformation simulation, if stop-condition is changed

Phase transformation

- Added the “Average Cooling Rate” field for the “Phase Transformations” module simulations
- Added the evaluation of phase volume changes in HT Adviser
- Added the assessment of the coefficient of thermal expansion for each phase in HT Adviser. This assessment is performed in cases where the coefficient of thermal expansion was not specified in a single-phase material.
- Added check for “Phase Transformations” license option to run “HT adviser for steels” in the “Deformable Materials” database
- HT Advisor for steels interface has been improved
- Improved the user interface and logic for hardness conversion
- Renewed the algorithm of phase transformation calculation

Grain size evolution

- Deleted the “MatILDa” folder with materials for grain size evolution simulation from the standard database of deformable materials, exported from the MatILDa software, due to the mismatch of parameters to the new material model structure
- Deleted the materials “AA 6063 SRX” and “AA 7075_DRX_7050_Yi” from the “Grain size evolution” folder of the standard database of deformable materials due to the mismatch of parameters to the new material model structure
- Added the material “AA 7075_JMAK” to the “Grain size evolution” folder of the standard database of deformable materials
- Updated the materials “08X13_JMAK”, “Inconel 718 JMAK”, and “Ti-6Al-4V_JMAK” in the “Grain size evolution” folder of the standard database of deformable materials
- Added a warning about invalidity of the postprocessor calculation of microstructure evolution if the pre-cooling operations on the “Blows” tab are present, as the preprocessor calculation records are not saved

Diffusion

- Added the capability to plot “Concentration” and “Activity” fields graphs for traced points
- The material model parameters necessary for simulating diffusion are now grouped into a separate “Diffusion” branch in the deformable materials database

QForm UK 10.3.3

26 September 2023

What's new

General simulation conditions and capabilities

- Fixed the bug which did not allow to start a simulation with the “Turn the workpiece with [tool]” option on the “Blows” tab
- Fixed the bug where element degeneration resulted in an error in the thermal problem simulation

QForm UK 10.3.2

19 September 2023

What's new

Server/Cloud

- Fixed the error that caused extra information to be displayed in the top right corner of the cloud version of the program when certain license options were present.

General simulation conditions and capabilities

- Fixed the error of incorrect formation of the contact task between the workpiece and the tool. The error happened when using the “General” tool deformation model in the coupled tool simulation. The error led to incorrect material behaviour and underestimation of the deformation load.

QForm UK 10.3.1

21 August 2023

What's new

Different interface capabilities

- Fixed unexpected program termination when creating parametric geometry on computers with old processors (without SSE4.2 instruction set support)

Server/Cloud

- Fixed the problem of running an operation with a large comment written for it. Comments to operations are no longer passed to the cloud server and are not stored in the simulation statistics.

QShape

- Fixed the bug that caused the import of geometry from *.iges files to fail in some cases

General simulation conditions and capabilities

- Fixed the calculation error that led to the calculation halt. This error occurred in the elastic-plastic problem when different nodes of the same element simultaneously contacted with multiple tools, one of which was spring-loaded, while the other was considered as a coupled.

QForm UK 10.3.0

25 May 2023

What's new

Object positioning

- Fixed the bug causing the program to crash when trying to change the position of an object in the source data mode if positioning history was previously changed in the simulation results mode

Import and export

- Fixed the bug that caused geometry imported from an *.unv file to not be displayed

License

- Improved the logic of working with license options in the “License Information” window

API

- Fixed the error that caused the program to crash as a result of executing the copy_object command in the API Wizard

General simulation conditions and capabilities

- Fixed incorrect behavior of the workpiece volume constancy algorithm in simulations with the implicit integration method
- Fixed the error occurring when automatically putting a workpiece in contact with a tool
- Fixed the error in inheriting the positioning of the workpiece's geometric mesh
- Fixed the error that resulted in areas with zero values of the calculated field “Distance to the tool” not fully matching the contact zone

- Fixed the incorrect operation of the drive with a periodic table function of displacement or velocity over time specified

Diagnostics

- Clarified the warning message about the necessity of using the implicit integration method in simulations with a spring-loaded tool

Databases

- Changed the way the mechanical press graph is plotted: the upper position of the ram corresponds to the angle of 0 degrees of the crank rotation, the lower position of the ram corresponds to the angle of 180 degrees of the crank rotation
- Fixed the error for tabular type of slider motion setting of the mechanical press model in the equipment database

Tracking

- Increased the accuracy of line tracing
- Fixed the error which caused the current coordinates of tracked points to record incorrect values for the “Export” > “Fields in tracked points” command

Subroutines

- Fixed the error that caused the absence of calculation results for the “Pressure” subroutine on contacting surfaces of assembly tool parts when using a “separate” coupled deformation model
- Fixed the calculation of standard subroutine “Surface flow analysis/expansion_ratio” for several workpieces

FE-Mesh

- Fixed the slowdown in calculating the deformation of the workpiece when using a large number of finite elements in the tool
- Fixed the degradation of the finite-element mesh of the workpiece during eccentric rotation

Longitudinal rolling

- In the rolling module, when plotting the “Load” graph for the selected roll, a rolling force graph is displayed, which is always positive and directed normal to the roll axis

- Fixed the incorrect calculation of the torque on the rolls and rolling force in the longitudinal rolling module when using planes of symmetry
- Corrected the sign of the rotational torque on the rolls in the longitudinal rolling, cross rolling, and ring rolling modules
- Fixed axis displacement in the “Reverse rolling” module when axes are defined with the “Calculate” button

Heat treatment of extruded profiles

- Fixed the error in the program's operation with the “Profile Cooling” license option

QForm UK 10.2.4

21 December 2022

What's new

Different interface capabilities

- Improved stability of selecting items in dropdown lists

Object positioning

- Closed access to the “Gravity positioning” tab when positioning a workpiece in a 2D task
- Fixed a bug for 3D operations that caused not taking into account the positioning when a workpiece is inherited from a 2D operation

Results view window

- When you hold down the Ctrl key, the view cube buttons rotate 45 degrees instead of 90

Work with simulation objects

- Fixed the bug causing the crash when importing several *.step files in the “Geometry” tab at once

API

- Fixed QFormApiCom.exe installer error, which didn't allow installation path to contain spaces

General simulation conditions and capabilities

- Improved contact task for two workpieces
- Corrected an issue with the algorithm for computing the tool's "coupled" heat transfer to the workpiece model
- Fixed the bug where the strain rate specified by a piecewise linear function was incorrectly taken into account for the "2D plane strain - 2.5D plane strain" problem type
- Fixed the workpiece geometry revolving algorithm errors when inheriting from a 2D operation to a 3D operation
- Fixed the error in computing the "Distance to contact" field

Boundary conditions

- Corrected cause of incorrect selection of workpiece surface with inherited hexahedral mesh when setting surface boundary condition on it

Diagnostics

- Added a warning message that does not allow starting simulation if the stop condition "Tool rotation" is set to a negative value

Databases

- Models of molten salts were added to the environments database
- Changed the structure of the environments database

Tracking

- Fixed the issue with creating undersurface flow lines in a workpiece inherited from a previous operation
- Fixed the bug that caused tracing results not to be saved when saving a process or a chain into a separate file and copying the simulation results

FE-Mesh

- Fixed the problem of tool-to-workpiece mesh adaptation when rolling two workpieces

Induction heating

- Fixed an issue that caused the power of the “Inductor” boundary condition to be taken into account incorrectly for problems with multiple symmetry planes
- Fixed incorrect interaction of the “Inductor” boundary condition with the hexahedral mesh
- Fixed incorrect interaction of the “Inductor” boundary condition with adaptation due to temperature

Longitudinal rolling

- Added a possibility to set the rotation speed or free rotation of the rolls without creating a drive in the equipment database in the longitudinal rolling module

Cross rolling

- Fixed the work of field “Minimum distance to surface” in a cross rolling operation type

Extrusion

- Fixed the error that caused the number of points created on the feeder to not match the specified number

Diffusion

- Fixed the error, which caused the simulation of diffusion processes to be performed incorrectly with the specified “Minimum number of records” parameter

QForm UK 10.2.3

27 October 2022

What's new

Object positioning

- Fixed an issue with not being able to enter a comma or dot when specifying the coordinates of the initial position of the grip in the positioning mode

Diagrams

- The “Graphs” window does not show the option to plot all blows if there is only one blow in the operation

Images and animation saving

- Fixed the bug, that caused the program to crash when trying to save a picture or an animation of a process with numerous blows

Multiwindow mode

- Fixed cause of program crash when deleting a chain of operations opened simultaneously in multiple windows in multi-window mode

Import and export

- Increased stability of the *.dxf file import algorithm
- Fixed the bug for projects saved with selected records in a *.stripped directory that caused the program to crash when trying to switch between operations

Reports

- Fixed the bug related to adding pictures to the template-generated report

General simulation conditions and capabilities

- Added possibility to specify the relationship between strain rate and tool stroke or process time in the tabular form for the “2D plane strain - 2.5D plane strain” problem type
- Load holder now stops after it loses contact with a workpiece
- Fixed the error when simulating an operation with multiple blows with the “Rotate workpiece with tool” option
- Fixed the issue that caused the hydraulic press not to stop when the maximum force was reached

Diagnostics

- Removed check for consistency between the sign of the angular velocity of the drive and the value in the “Tool rotation” stop condition. The stop condition “Tool rotation” now requires the absolute value of the rotation angle.

Databases

- Added the option to import and export items to/from any database using the *.qdat-bin file
- Fixed the error in the deformed materials database that caused the number of flow stress graphs not to update when changing the number of values of the table function parameters

Subroutines

- Fixed an issue when trying to execute the Cylindrical coordinate system subroutine

FE-Mesh

- Changed wording when specifying rectangular (2D) or hexahedral (3D) mesh parameters in “Parametric geometry” option
- Fixed the workpiece mesh penetration into tools when working with dual mesh method

Induction heating

- The algorithm for computing the “Inductor” boundary condition has been completely reworked
- Added support for the “Inductor” boundary condition to the “General forming” operation type and to the “2D plane strain” problem type
- Now the “Inductor” boundary condition allows heating of any geometry shape
- Removed the requirement to place the workpiece coaxial to the Z-axis for the “Inductor” boundary condition
- Fixed a bug where the “Inductor” boundary condition defined a round workpiece as rectangular

Sheet-bulk forming

- Corrected the cause of an internal error when starting a simulation in the Sheet-bulk forming module

Longitudinal rolling

- Reconditioned column names for the “Passes” tab in the “Reverse rolling” module
- Fixed passes missing when the workpiece crosswise movement equals to zero mm in the reverse rolling module
- Fixed automatic workpiece positioning error when auto-positioning is switched off in the longitudinal and reverse rolling modules

Extrusion

- Fixed an error in rendering the result of calculation of the “Billet skin” subroutine, leading to a program crash
- Fixed the error that caused the specified intermediate records not to be displayed on the graph
- Fixed the error that caused the results of the subroutines “Back end layer” and “Billet skin” not to be displayed in simulations with multiple billets

Heat treatment of extruded profiles

- Added accounting for object shadows for spray-cooling
- Fixed the bug causing the program to crash when trying to delete multiple sprayer groups using the right-click menu command

Phase transformation

- Changed the default window size for the HT adviser
- Fixed an issue with displaying the martensitic transformation model graph in the deformed materials database
- Fixed program crash occurring when converting hardness in multi-window view
- Fixed program crash when editing a new phase transformation in the deformed materials database

Grain size evolution

- Added three steel grades exported from MatILDa software intended for the simulation of microstructure evolution to the standard database of the deformed materials
- Added Kgg coefficient values for the “Grain size evolution” model of the deformed materials 08Cr13_JMAK, Inconel 718 JMAK Huang, Ti-6Al-4V_JMAK in the standard database

QForm UK 10.2.2

30 June 2022

What's new

Diagrams

- Fixed the error that caused the program to crash when typing in the coordinates of the start point and the end point of “Show graph along line” function

Images and animation saving

- Added the option to display a graph along line when creating a picture or animation

License

- The algorithm of automatic assignment of a workplace mode with a network license has been improved. Now, if there are no free seats in the simulation mode, the workplace is automatically assigned to the initial data preparation mode. The viewer mode is assigned automatically if there are no free seats in other modes.
- Fixed the bug in the “License Info” window that caused the number of seats to be displayed incorrectly when using a network key, if all seats were occupied
- Fixed the bug that made workstation mode switching options not appear on a computer with a network HASP key
- Fixed a “HASP key not found” message in the simulation log

API

- Added new API commands
- Added the “move_dependent_objects” parameter to the API functions “object_move” and “object_rotate”, which is used to position the specified object together with its boundary condition domains and adaptation domains

General simulation conditions and capabilities

- Fixed the bug that prevented forced simulation records at the nodes of the piecewise linear function defined for a tabular equipment drive
- Fixed incorrect tool rotation for 2D axisymmetric operations with multiple blows

- Fixed the error of tool axis anchoring when putting the tool in contact with the workpiece. Restored the calculation of torque in relation to the axes of a progressively moving tool.
- Fixed the error that caused the program to crash when starting the simulation at an operation following another operation without calculation results

Boundary conditions

- For 2D tasks, added an option to load domain geometry from *.dxf files

Tracking

- Fixed the issue when trying to export a workpiece with undersurface flow lines to *.dxf file before executing tracking
- Fixed the tracking of points and array of points

FE-Mesh

- Added an option to generate triangle mesh for parametric geometry (2D) based on rectangles
- Improved meshing algorithm for closed die forging processes
- Fixed the problem of incorrect mesh generation in the tool when the mesh properties are defined by the adaptation parameters method, but earlier the mesh properties were defined by the element size method, and the element size parameters were not deleted when switching the mesh definition method

Sheet-bulk forming

- Fixed the issue when trying to execute subroutines for the “Sheet-bulk forming” operation type
- Fixed an error that causes the program to crash when selecting a material in the database of deformed materials with an FLD diagram

Longitudinal rolling

- Changed the direction of vertical roll displacement between passes in the reverse rolling module. Now with a positive value in the pass table column “Rolling gap change” the rolls are dilated, with a negative value - brought together.
- Fixed cause of program crash when starting to calculate reverse rolling without simulation results, if not the first pass of rolling is active
- Fixed the problem of remeshing in the rolling module occurring when single elements are being squeezed into the roll gap

Phase transformation

- Fixed the error in the algorithm for calculating martensitic transformation, leading to excessive martensite

Grain size evolution

- Added Kgg factor to the parameters of the workpiece material grain growth model in the deformed materials database
- Restored grain size evolution calculation for dual mesh

QForm UK 10.2.1

26 April 2022

What's new

Work with simulation objects

- Fixed the error that caused the program to crash when a workpiece or tool is selected in the main window when the “Geometry” tab is open

Import and export

- Fixed problem with inheriting the “Relative density” field loaded from an *.unv file

Server/Cloud

- Restored QForm Server on Linux

General simulation conditions and capabilities

- Fixed a bug that caused two interacting power drives to move incorrectly
- Fixed the error for “move backward first” option when putting the tool in contact with the workpiece at the beginning of simulation, if the volume change coefficient greater than 1 is set in the parameters of the workpiece
- Fixed the cause of displaying the negative value of the current operation time in the “Simulation state” tab when simulating a cyclic tool heating operation
- Fixed the bug that caused the “Emissivity” parameter to be taken into account in a simulation if it was deactivated

Boundary conditions

- Fixed the error that occurs when using surface type boundary condition for an assembled tool

Tracking

- Fixed the error that caused a graph for the tracking point to be plotted only in the operation where the point had been created

Extrusion

- Improved logic of scale visualization for field “Longitudinal seam”

Phase transformation

- Fixed an error in the algorithm for calculating martensitic transformation, leading to insufficient martensite