Multi-disciplinary integrated analysis solution for optimal design

midas NFX 2020R2 Enhancements

midas NFX
Release Note

2020 R2

Major Updates

midas NFX provides complete integration/linked analysis of structure/heat/fluid/optimization using a single model in a single work environment, and a familiar environment for designers and systematic education and technology through a window-based GUI.

In midas NFX 2020 R2, we strived not only to improve product performance and stability, but also to increase user convenience. We promise to provide a variety of convenient functions in order to establish ourselves as a reliable partner in the future.

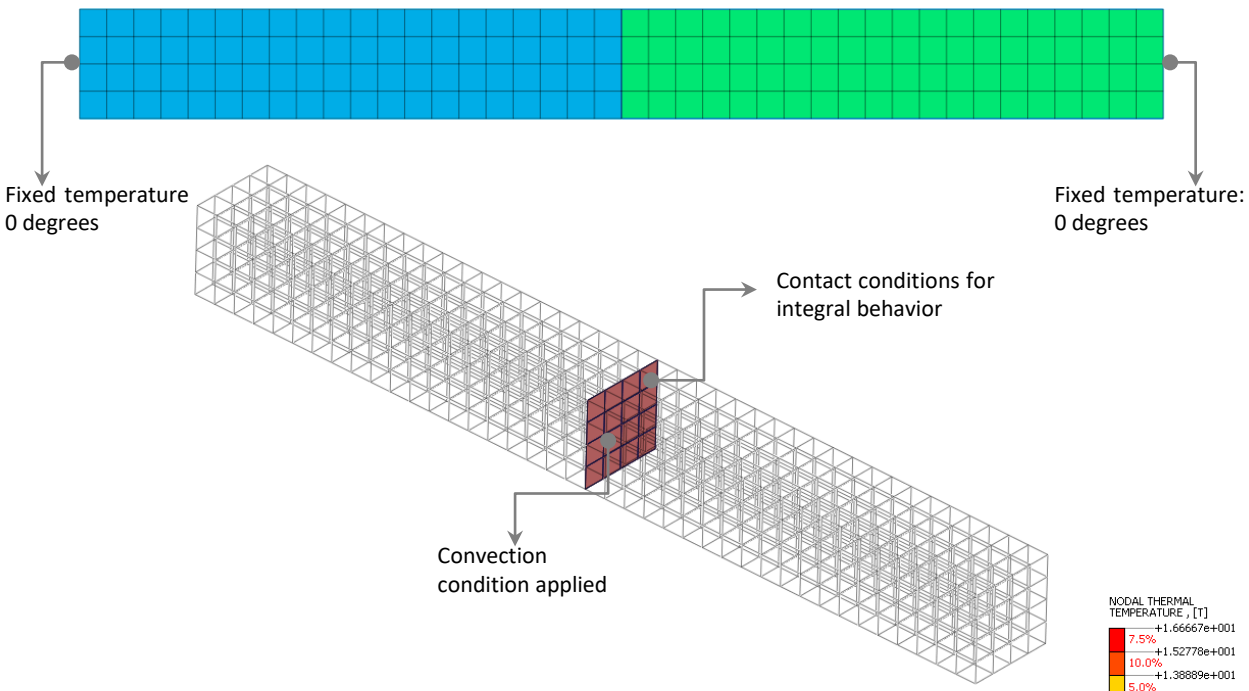
CAD Interface Update

The CAD Interface was updated according to the CAD Version update. Support for the latest version of CAD Interface may be delayed depending on the supplier's update environment. If the latest version is not supported, please convert it to Parasolid or STEP file. We will do our best to quickly reflect the latest version of CAD.

Type	Extension	Version
Parasolid	x_t, xmt_txt, x_b, xmt_bin	9.0 ~ 31
ACIS	Sat, sab. asat, asab	R1 ~ 20201.0
STEP	stp, step	AP203, AP214, AP242
IGES	igs, iges	Up to 5.3
Pro-E / Creo	prt, prt.*, asm, asm.*	16 ~ Creo 6.0
SolidWorks	sldprt, sldasm, slddrw	98~2020
CATIA V4	CATPart, CATProduct, cgr, CATDrawing	4.1.9~4.2.4
CATIA V5	CATPart, CATProduct, cgr, CATDrawing	V5R8 ~ V5-6R2020
Unigraphics	prt	11 ~ NX 1899
Inventor part	ipt	V6 ~ V2020
Inventor Assembly	iam	V11 ~ V2020
SolidEdge	par, asm, psm	V18 ~ SE2020

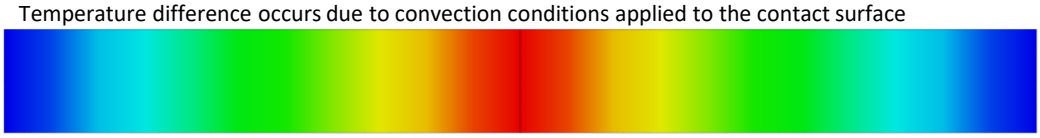
Added function to ignore contact surface convection

When performing heat transfer analysis of a model composed of multiple parts, heat transfer between parts is implemented using contact (integral behavior). The area where the actual contact occurs is the area in which the two parts are expressed as a continuum and no convection occurs. In the previous version, in the case of a large number of parts, the user had to select the outer surface selectively in order to select the part where convection is expected, or the user had to deselect the contact surface after selecting all. This function is a convenience function that does not require the user to selectively designate the convection surface because the analysis proceeds by ignoring the convection condition specified in the part where the contact (integral behavior) is defined.



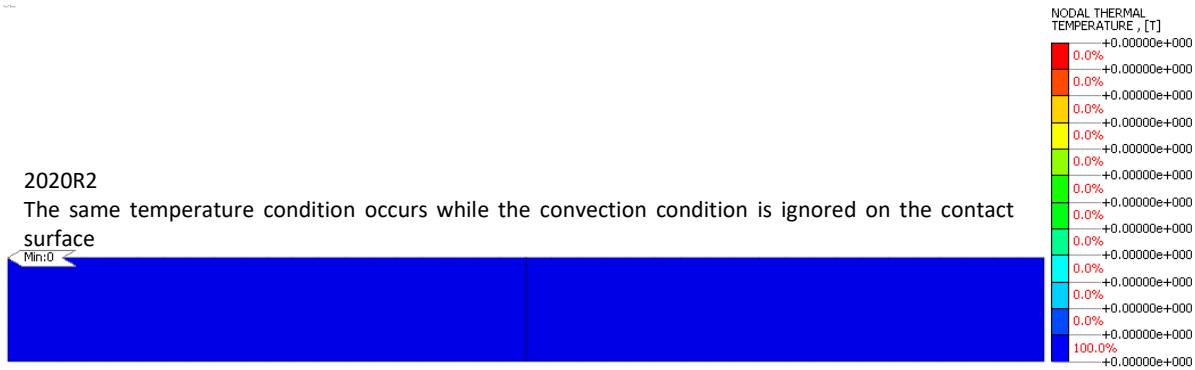
2020R1

Temperature difference occurs due to convection conditions applied to the contact surface



2020R2

The same temperature condition occurs while the convection condition is ignored on the contact surface



Other improvements

< Improvement on node average stress calculation >

From the method of collectively averaging the existing element stress components (stress by direction, principal stress), it is improved by averaging the element stress by direction and then recalculating the principal stress. In the case of the existing method, there was a problem that a slight difference occurred between the von-Mises stress calculated based on the stress component for each direction and the von-Mises stress calculated using the principal stress component.

< Improvement of stress linearization function>

When using the stress linearization function, the problem of calculation due to missing values in some sections or changing in/out positions has been improved.

< Improvement of display when inputting the reference load in the cylindrical coordinate system>

Improved the problem of displaying in Cartesian coordinate system even though the load was entered based on the cylindrical coordinate system.

< Improvement of temperature-dependent material input window>

The temperature-dependent elastic modulus, Poisson's ratio, mass density, conductivity, specific heat, and heat coefficient have been improved to input temperature in column 1 and material properties in column 2. (In the previous version, 1st column was material properties, 2nd column was temperature) For this reason, it has been changed so that the material values can be entered normally when performing heat transfer analysis using temperature dependent materials.

< Improved display of unconstrained bar element ends>

Improved the display method differently from the corresponding coordinate system when the bar element ends are unconstrained. It has been modified so that it can be output based on the element coordinate system, and the display of degrees of freedom has been improved so that it can be checked intuitively.

< Improved display of unconstrained bar element ends>

Improved the display method differently from the corresponding coordinate system when the bar element ends are unconstrained. It has been modified so that it can be output based on the element coordinate system, and the display of degrees of freedom has been improved so that it can be checked intuitively.

< Improved linear result combination function >

The result combination function in miscellaneous functions of post-processing result analysis has been improved. In particular, when using a linear combination, the problem in which the value of the total displacement is output without considering the directionality has been improved so that the total displacement can be calculated after summing by X, Y, Z directions.

< Radius of Gyration output function added for solid port shape >

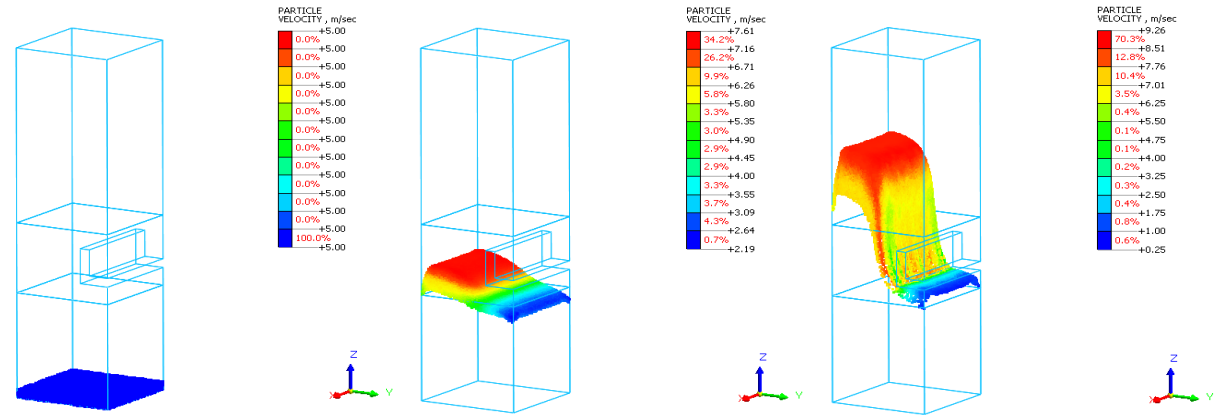
Added the ability to display Radius of Gyration in the property window when selecting a solid model. Added the ability to output the center of mass and the turning radius for each axis.

< Improved relative displacement animation output function when analyzing frequency response>

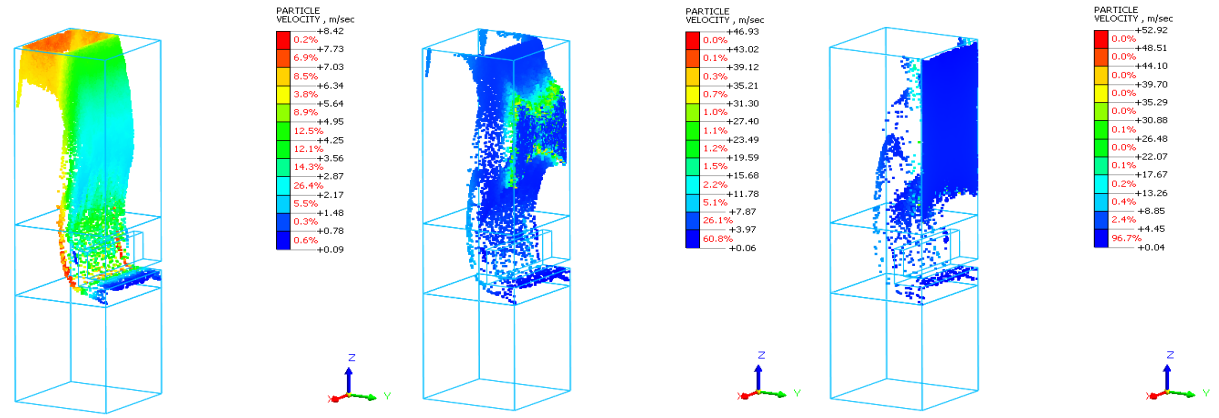
In the frequency response analysis, the result was output as relative displacement, but in animation, the problem that is output based on absolute displacement has been improved so that it can be output based on the relative displacement value.

Particle analysis – user defined external force model (fluid analysis)

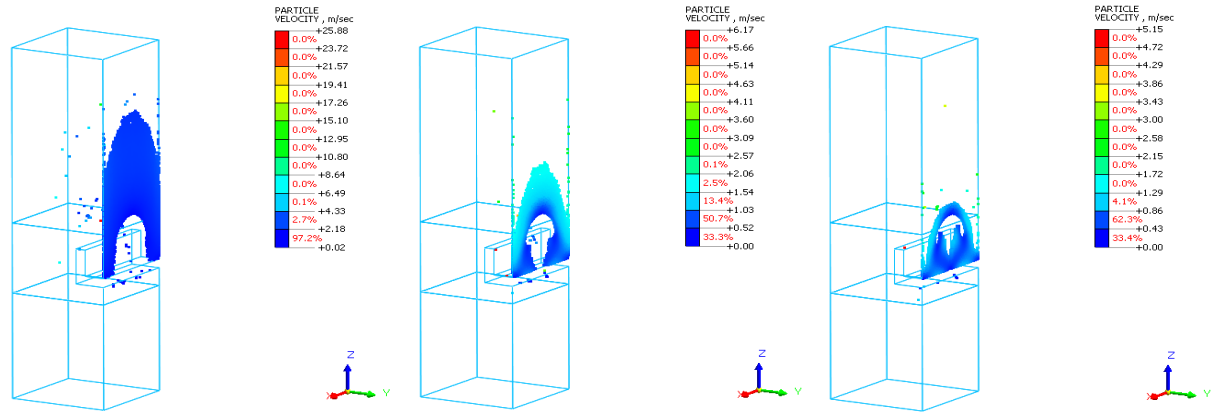
A function that can reflect user-defined functions for external force models has been added to the particle analysis function provided by the existing midas NFX. It is the same as the general flow analysis function input method, and the function entered in [Analyze Case > Analysis Control > Module Information > Particle Analysis > External Force Model > User Defined Function] can be set according to the x, y, z direction.



0 [s] 0.25 [s] 0.4 [s]



0.6 [s] 0.65 [s] 0.75 [s]



1.4 [s] 1.75 [s] 2.0 [s]

< Particle velocity results over time using a custom external force model >