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Introduction of Features Contributing

to an Easy-to-Use JMAG-Designer

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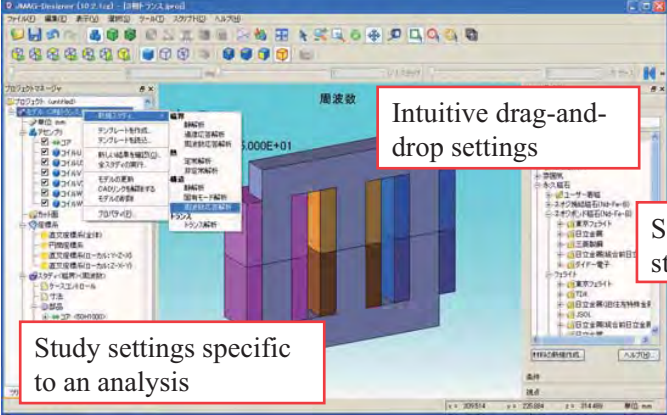# Introduction of Features Contributing
to an Easy-to-Use JMAG-Designer

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Contents

- JMAG-Designer is an easy-to-use simulation software for electromechanical design.

- This seminar introduces the new features implemented into JMAG-Designer along with a demonstration of how they work.

  - Features and Characteristics of the General Users Interface
  - Introduction of Features
    - Analysis templates
    - Parametrics
    - Editing CAD models
    - Automatic Script Recording
  - Other Features

Simulation Technology for Electromechanical Design
JMAG-Designer
Version 10
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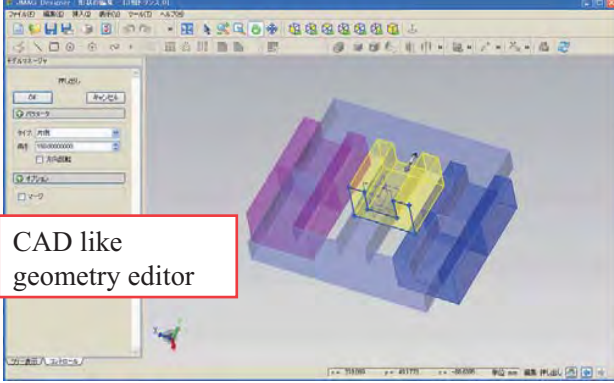
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Features and Characteristics of the General Users Interface
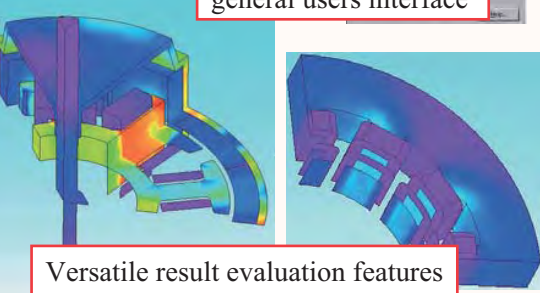

Intuitive drag-and-drop settings

Simple duplications of studies as different studies

Study settings specific to an analysis

Clear treeview type general users interface

CAD like geometry editor

Versatile result evaluation features

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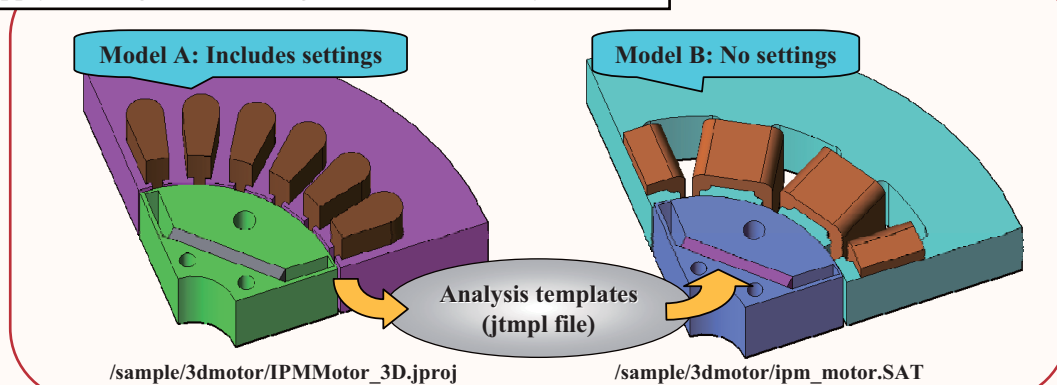

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Analysis templates

Demonstration

- The analysis template feature allows the settings of an existing model to be utilized for a new analysis model.

Demonstration:
•Apply existing model settings to a different analysis model

Model A: Includes settings

Model B: No settings

Analysis templates
(jtmpl file)

/sample/3dmotor/IPMMotor_3D.jproj   /sample/3dmotor/ipm_motor.SAT

•**The data of existing analysis models (materials, conditions, result display settings), excluding the geometry, can be saved as a file.**

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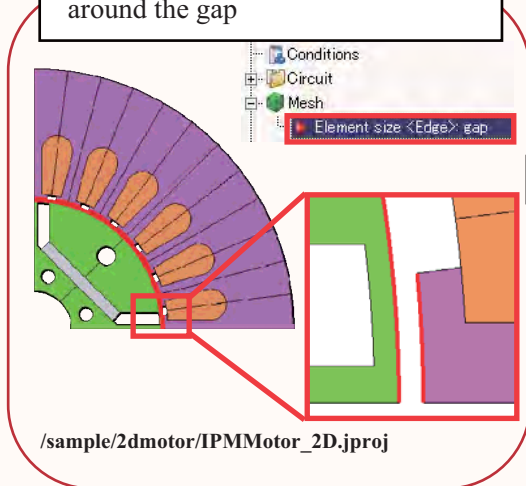
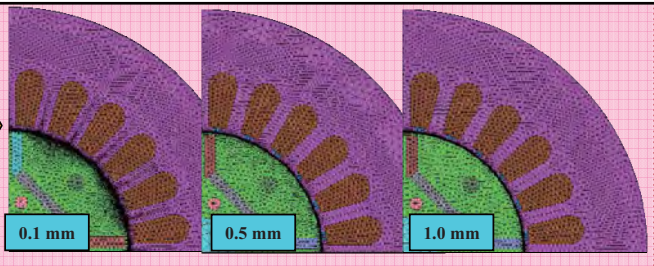## Parametric (1) – Settings

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Demonstration

■ The parametric feature is used to run an analysis using multiple analysis models that have differing settings.

Demonstration:
•Create multiple analysis models with differing element sizes for regions around the gap

/sample/2dmotor/IPMMotor_2D.jproj

Analysis models with differing element sizes around the gap

0.1 mm   0.5 mm   1.0 mm

•**All of the condition, material, and property settings can be selected.**
•**Multiple settings can be combined and selected as parametrics to run an analysis.**

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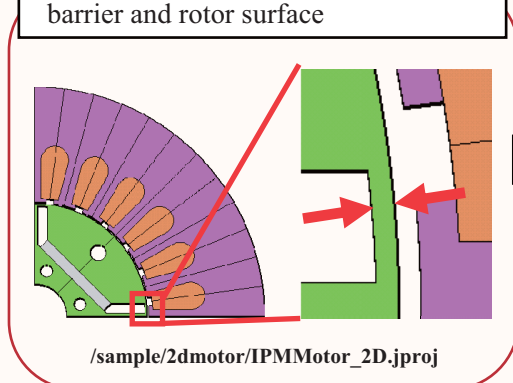

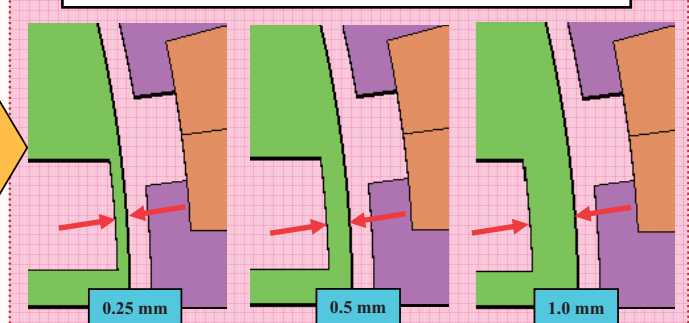## Parametric(2) – Geometry

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Demonstration

■ The parametric feature can also easily create multiple analysis models with differing geometry.

Demonstration:
•Create multiple analysis models that have differing thicknesses for the flux barrier and rotor surface

/sample/2dmotor/IPMMotor_2D.jproj

Multiple analysis models with differing thicknesses

0.25 mm   0.5 mm   1.0 mm

•**Geometrical information (constraints/coordinates) can also be selected.**
•**The parametric feature also supports links to the motor template and SolidWorks.**

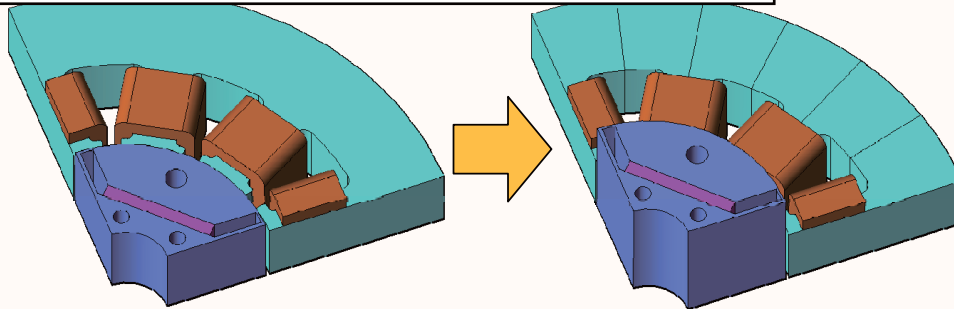   **http://www.jmag-international.com/**   JSOL CORPORATION   6

Editing CAD models

Demonstration

- Solid model geometry created in general CAD systems such as SolidWorks or CATIAV5 can be edited/processed directly in JMAG-Designer without having to return to the CAD system.

Demonstration:
- Change the height of the rotor
- Change multiple solids accounting for the periodicity of the stator

/sample/3dmotor/ipm_motor.SAT

- **Solid model geometry can be easily edited/processed using the geometry editing features.**

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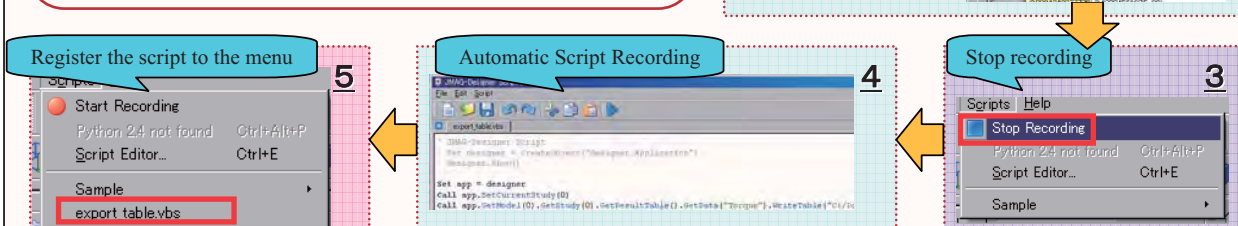

Automatic Script Recording

Demonstration

- The automatic scripting feature allows script to be generated easily.

  - The script can be recorded while operations are performed in the general user interface.

  - The script that is saved can be registered in the [Scripts] menu.

  - Original features can be registered in the menu.

Demonstration:
- Automatically record script to export the torque ripple to a CSV file.
- Register the script that is generated to the menu.
- Run the script from the menu.

/sample/2dmotor/IPMMotor_2D_results.jproj

Start Recording   **1**

Export the torque ripple   **2**

Register the script to the menu   **5**

Automatic Script Recording   **4**

Stop recording   **3**

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Other Features

- There are many other rich features built into JMAG-Designer in addition to the features introduced here.
- Section analysis
  - A 2D analysis can be run by cutting a cross-section from a 3D analysis model.
- Analysis calculation monitoring
  - Results including the electromagnetic force and torque can be displayed while an analysis is being run.
- Analysis reports
  - Information from the geometry to contour/vector plots and graphs can be automatically added to reports.
- CAD links
  - The geometry of models can be edited in the CAD system while maintaining the settings that are specified.
  - SolidWorks, CATIA V5, Pro/Engineer, and NX
- CAD diagnostic features
  - The model can be examined to see if there are any areas that may cause problems when generating mesh.
- Space-filling mesh
  - Mesh can be generated only in the air region while maintaining the existing mesh of the model.
- Layered mesh
  - Layered mesh can be generated automatically to comprehensively analyze the laminated steel sheets of models.
- Script
  - The pre/post processors can be controlled using scripts.
  - VBScript, Python, Jscript

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Conclusion

- What is your impression of JMAG-Designer?

- Features demonstrated in this seminar:
  - These features can be evaluated using only the pre/post license.
    - There is no need for any special licenses.
  - All of the data that is used is available as sample data in the folder JMAG is installed.
  - These features can be quickly tested in JMAG-Designer in minutes.

- Don't hesitate to try them today.

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