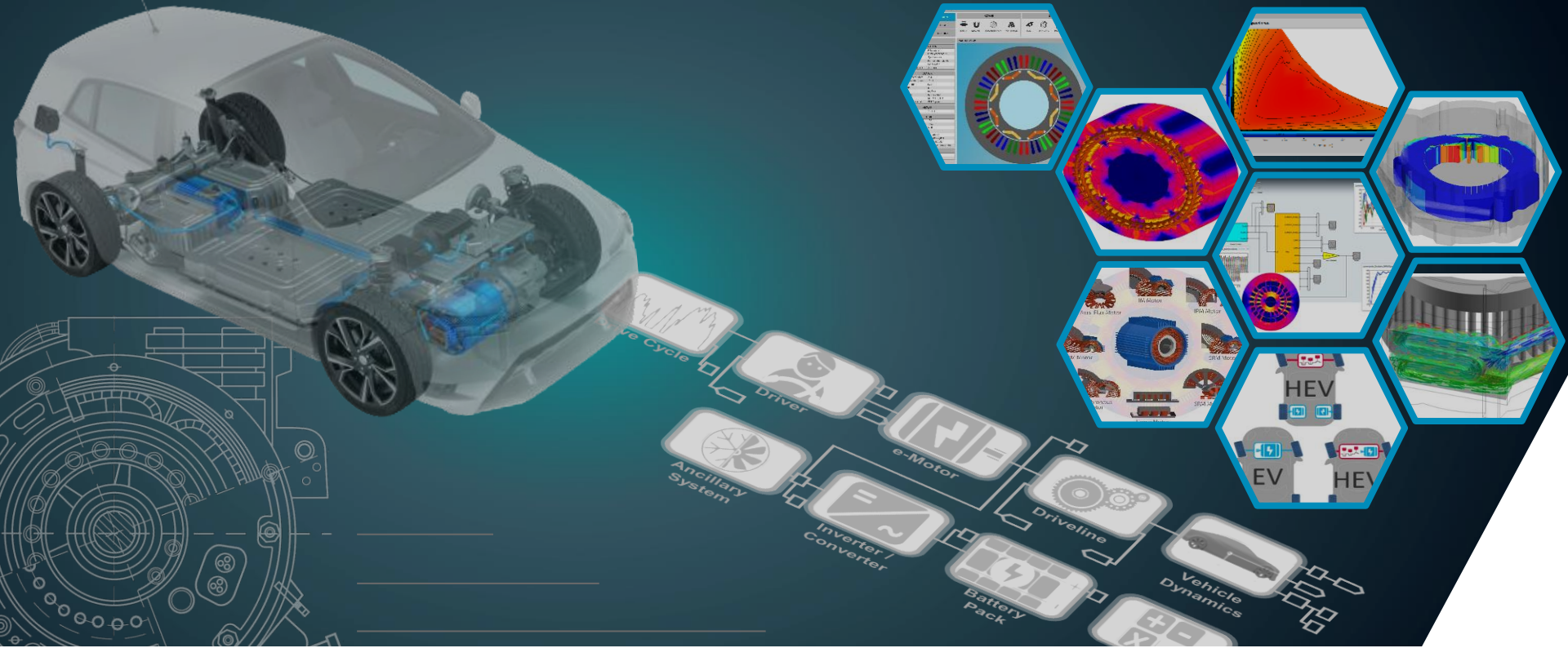


MOTOR MDO PROCESS: GETTING STARTED

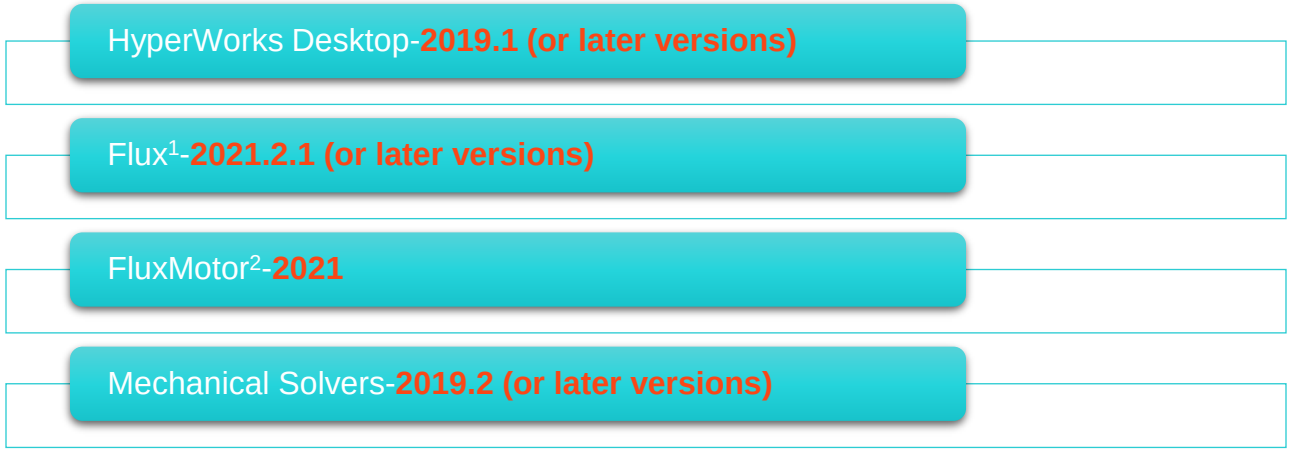
ALTAIR MULTIDISCIPLINARY DESIGN OPTIMIZATION PLATFORM FOR ELECTRIC MOTORS

October 2021, Altair Flux / FluxMotor Valorization and Support Team

SOFTWARE REQUIREMENT

SOFTWARE REQUIREMENT

- Software (and the required versions) using in the Altair Multidisciplinary Design Optimization platform for electric motors:



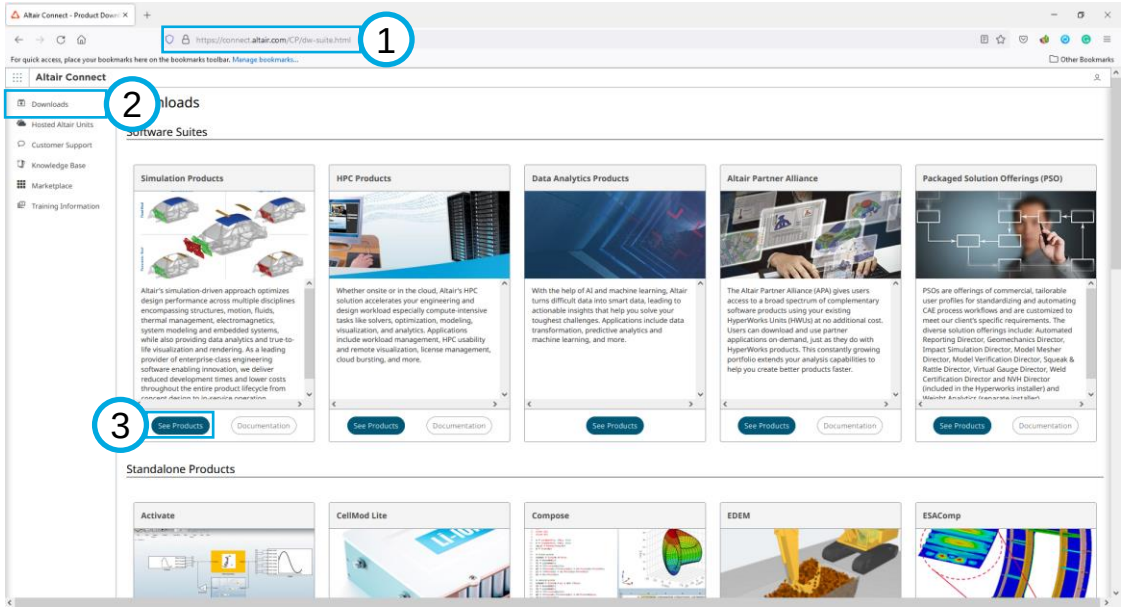
- The latest versions are recommended to build the MDO platform.
- Total Altair HyperWorks Unit (HWU) number required in the project is **30.**

[1]The previous versions of Flux has a .STEP file compatibility issue with HyperMesh.
[2]The original model provided in the tutorial is generated in FluxMotor 2021.

SOFTWARE REQUIREMENT

- Software download
  - Using the Altair Connect system

Step	Action
1	Go to Altair Connect : https://connect.altair.com/
2	Click on [Download]
3	Click on [See Products] in the “Simulation Products”



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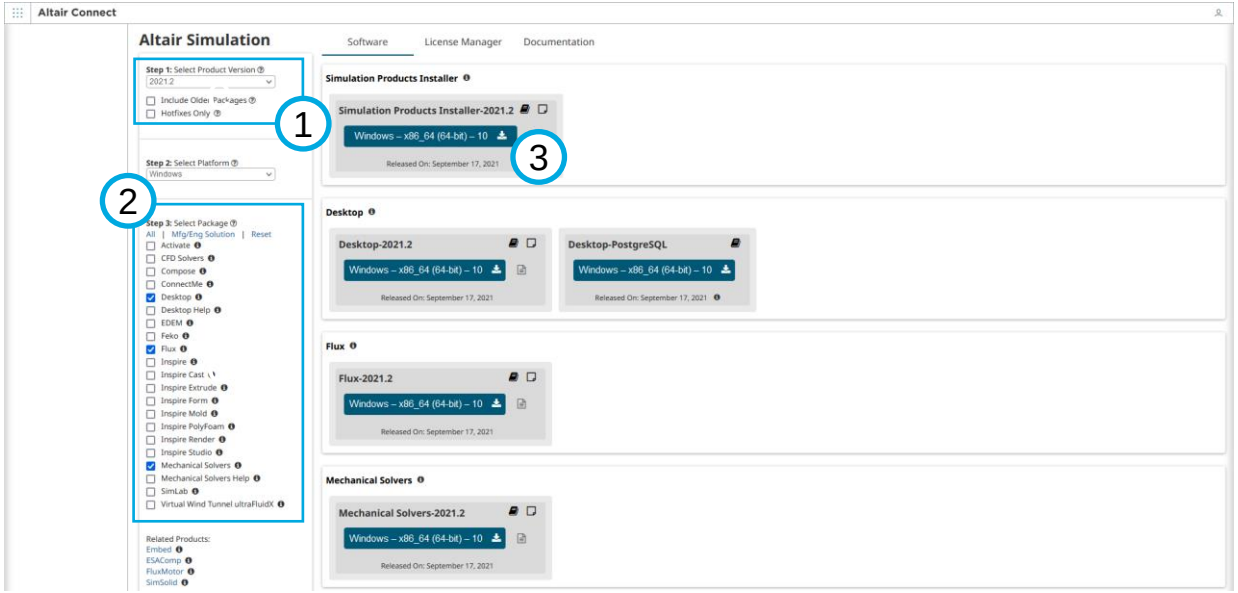
SOFTWARE REQUIREMENT

- Software download
  - Desktop, Flux, and OptiStruct

Step	Action
1	Select the software version
2	Choose the next software packages: • Desktop • Flux • Mechanical Solvers
3	Download and install them

Notes:

1) *Altair HyperStudy and Altair HyperMesh are contained in **Desktop** package*
2) *Altair OptiStruct is contained in **Mechanical Solvers** package*
3) *Installation of newest version is strongly recommended*



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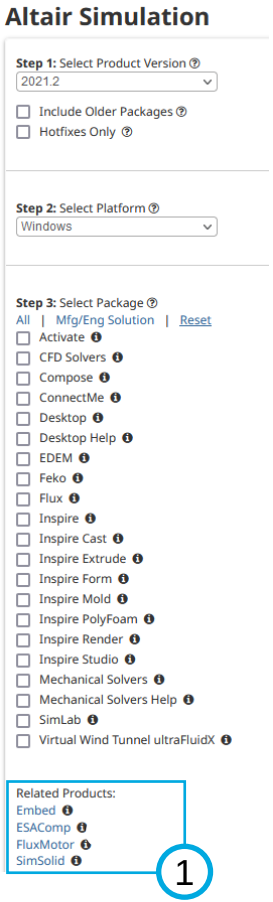
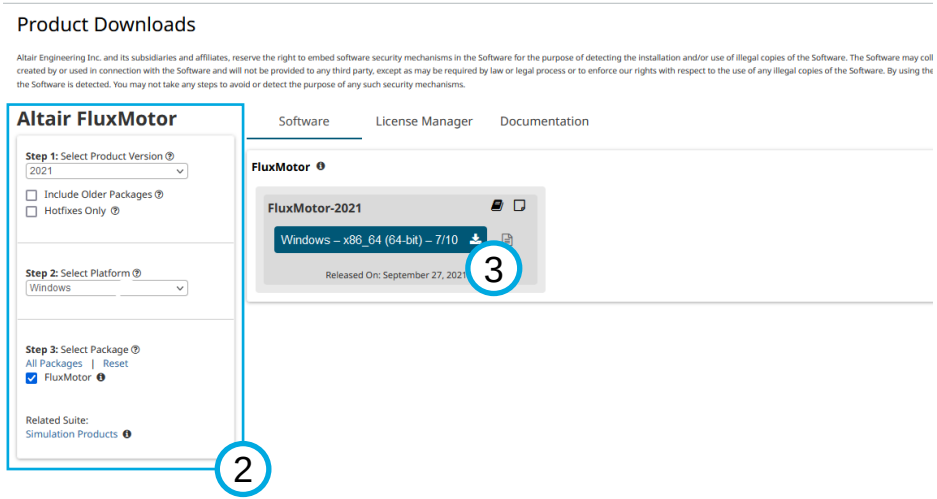
SOFTWARE REQUIREMENT

- Software download
  - FluxMotor

Step	Action
1	In “related products”, click on FluxMotor
2	Select the newer version and your operative system
3	Download and install FluxMotor





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MDO PROJECT TUTORIALS

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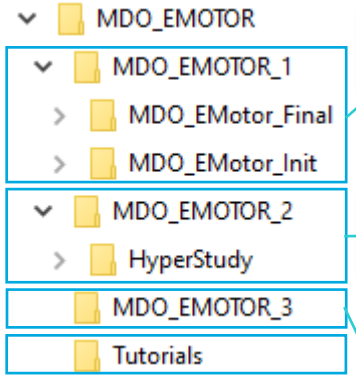
MDO PROJECT TUTORIALS

- Three different ways are possible to reproduce the tutorial about multidisciplinary optimization design for motor:



Case 1: MDO EMotor project step by step

- All the connectors will be generated by users

Case 2: MDO EMotor study step by step

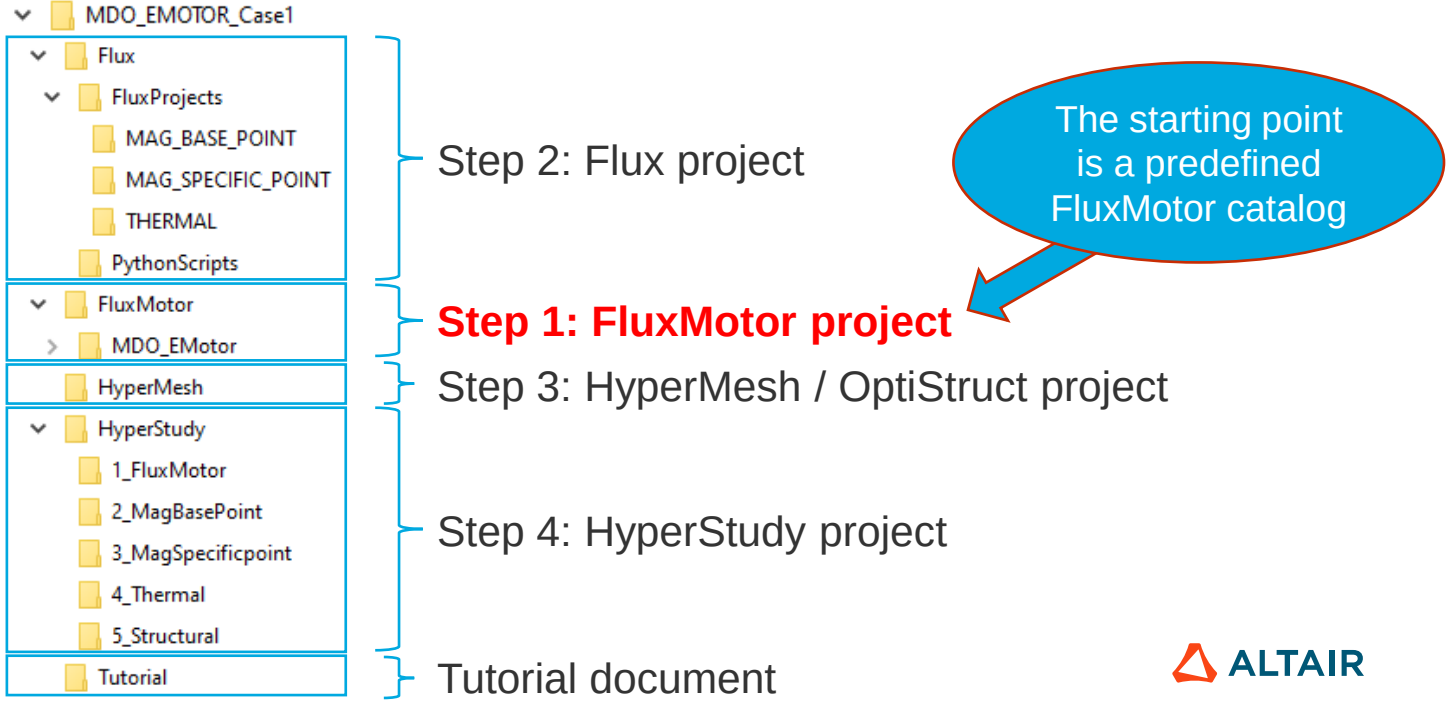
- All the connectors and command scripts are prepared

Solution 3: MDO EMotor completed study archive

- User can run HyperStudy by importing the archive

MDO PROJECT TUTORIALS

- Solution 1: MDO EMotor project step by step
  - In this solution, different Altair software will be used to create connectors for optimization in HyperStudy.



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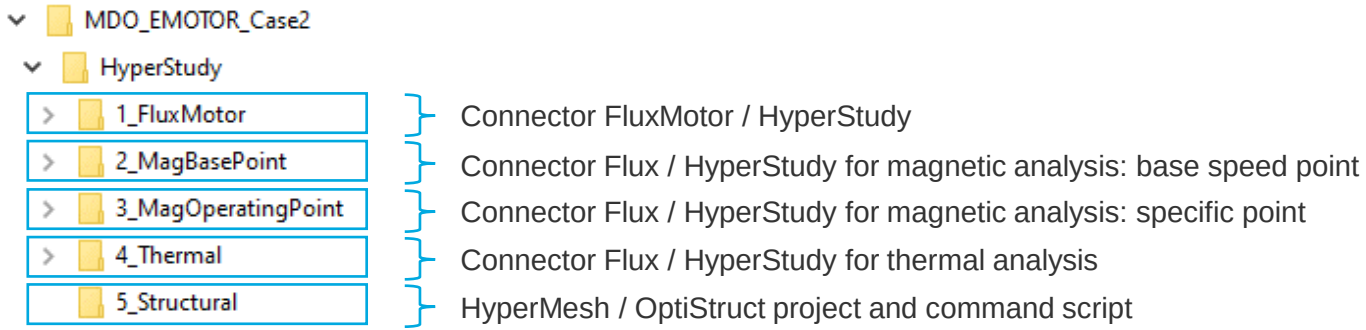
MDO PROJECT TUTORIALS

- Solution 2: MDO EMotor project begins by “Connectors”
  - In this solution, all the connectors for multidisciplinary analysis are prepared.
    Only the HyperStudy project need to be created for the optimization step.
  - Please create a FluxMotor Catalog before running the optimization in HyperStudy.
    This Catalog will be used to save all the designs during the optimization step.



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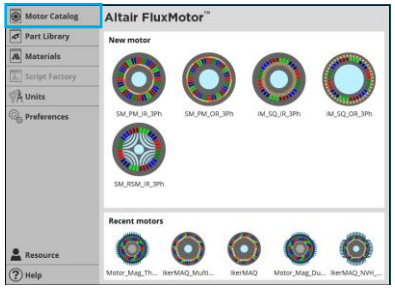
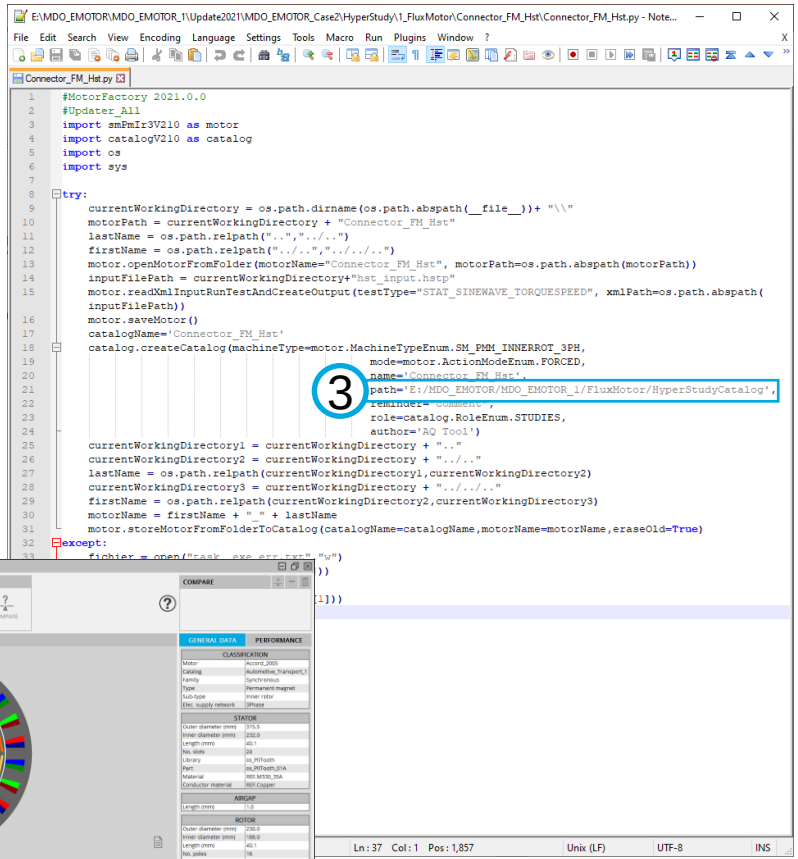
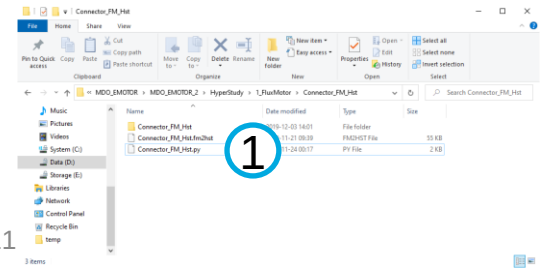
MDO PROJECT TUTORIALS

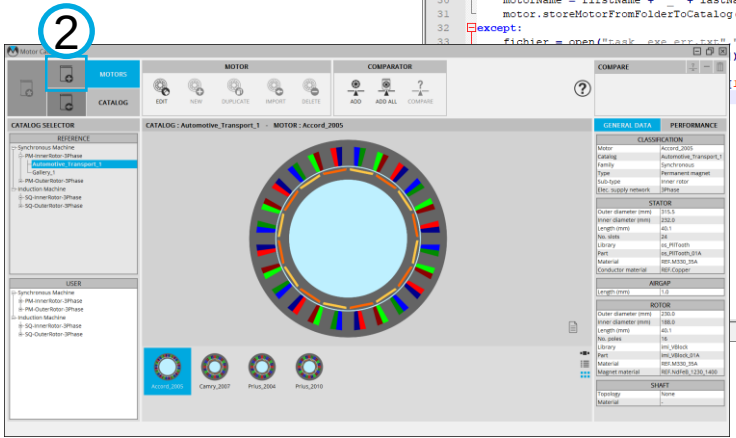
- Solution 2: MDO EMotor project begins by “Connectors”
  - Create a FluxMotor Catalog for optimization

Step	Action
1	Open the file “~\MDO_EMOTOR_Case2\HyperStudy\1_FluxMotor\Connector_FM_Hst\Connector_FM_Hst.py”
2	Create a FluxMotor Catalog named “Connector_FM_Hst”.
3	Update the FluxMotor Catalog path with the Catalog create in step 2









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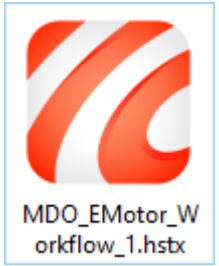
MDO PROJECT TUTORIALS

- Solution 3: MDO EMotor project begins by importing the HyperStudy project
  - The optimization process can be reproduced in HyperStudy by importing directly the archive file (~\MDO_EMOTOR_Case3\MDO_EMotor_Workflow_1.hstx)



  - Please create a FluxMotor Catalog before running the optimization in HyperStudy (please refer to page 11). This Catalog will be used to save all the designs during the optimization step.
  - Please check the solver definition in HyperStudy before running the optimization (please refer to the tutorial document *05A_HyperStudy_Initiation*, page 6-8).

THANK YOU

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#ONLYFORWARD

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