Simulink export

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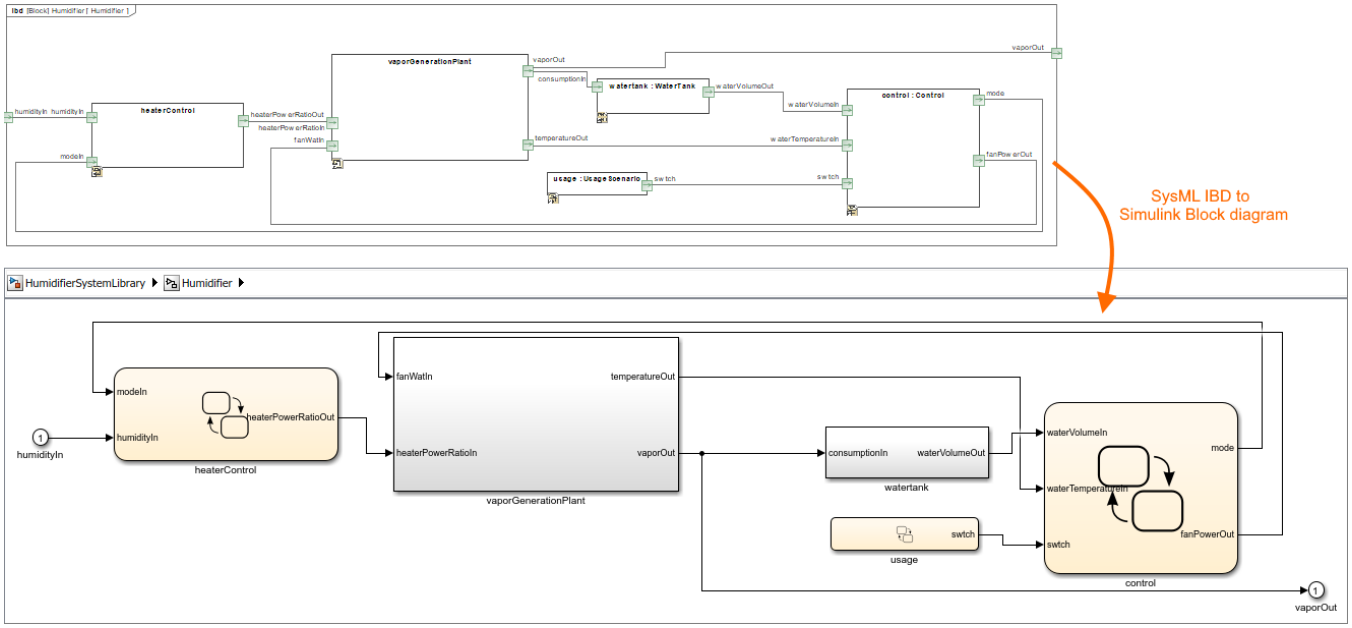
Introduction

Information stored in SysML models can be reused in simulations performed by Simulink and existing Simulink models can be brought back into MBSE environment. Most often system engineers model the system down to a point of where executable models start in Simulink. The purpose is to keep these models consistent as the system design evolves.

Export to Simulink Tool allows to generate the Simulink model from SysML model. The SLX or MDL file format is created that contains the block diagram and block properties of the simulation. The following figure illustrates the SysML Internal Block Diagram exported to Simulink Block diagram.



The SysML Internal Block Diagram exported to Simulink Block diagram.

Exporting model to the Simulink file

You can export to the Simulink file:

- Block - exports the model (Read the procedure below).
- Instance Specification - exports particular configuration with initial values and subtype instances as specified in the instance model.

To export model to the Simulink file

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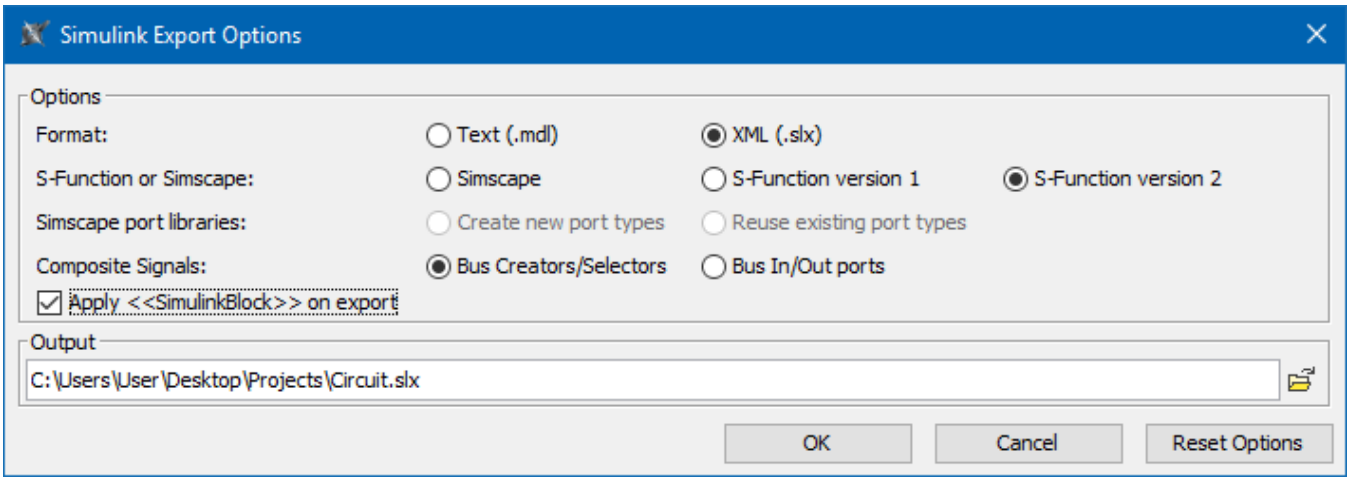
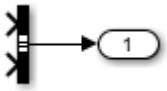
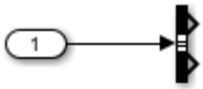
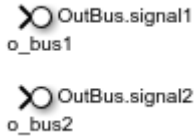
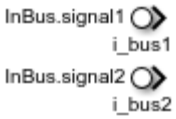
1. In the Model Browser, select the Block you want to export and do one of the following:
   - In the top-left corner of the modeling tool, click **File** > **Export To > Simulink**.
   - Right-click the selected Block and then click **Tools** > **Export to Simulink**.
2. Specify export options in the **Simulink Export Options** dialog. Option descriptions >>
3. Click **OK**.
   The Simulink (.slx) file is generated and saved to your file directory.

Simulink Export Options

Each time you export your model to the Simulink file, the **Simulink Export Options** dialog opens with already selected options. The detailed descriptions are provided in the following table.



Option	Description
Format	Select the file format to export: • Text (.mdl) - exports to legacy textual format • XML (.slx) - exports to compressed XML-based file format.
S-Function or Simscape	Select how to export SysML parametrics: • as Simscape - file type dedicated to use in the MATLAB® environment with an extension `.ssc`. Use ssc_build in Matlab to generate library and blocks from generated Simscape files. If blocks have bidirectional (inout) ports, Simscape should be selected as export option, as Simulink only supports unidirectional inports and outports. • as S-Function version 1 - generate all constraints into separate files that contain functions. • as S-Function version 2 - generate all constraints into separate files that contain functions.
Simscape port libraries	Select whether to create or reuse existing port types.
Composite Signals	Select how to export Proxy Port/Interface Block with multiple Flow Properties (composite signals): • as bus Creators/Selectors. Bus Creator blocks create buses within a subsystem or model.  Bus Selector blocks extract specified elements of the bus.  • as bus In/Out ports. Out Bus Element blocks create a bus at a subsystem or model interface.  In Bus Element blocks extract specified elements of a bus at a subsystem or model interface. 

Apply <<SimulinkBlock>> on export	Select to automatically apply the <<SimulinkBlock>> stereotype upon the export of the selected Block.
	Click to specify the location of generated Simulink file or rename the file.

Related pages

- Reusing and referencing Simulink models
- Using SysPhs constant and SysPhs variable
- SysML supported and unsupported concepts
- Simulating exported Simulink models