

# Preparatory work

## iTesla PowerSystems Library Tutorial

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# Requirements

## **Requirements for the workshop are:**

- PC with installed Windows 7 or later
- Installation of OpenModelica



# Installation of OpenModelica

- Installation file of OpenModelica can be found on:

<https://build.openmodelica.org/omc/builds/windows/releases/1.9.3/OpenModelica-v1.9.3.exe>

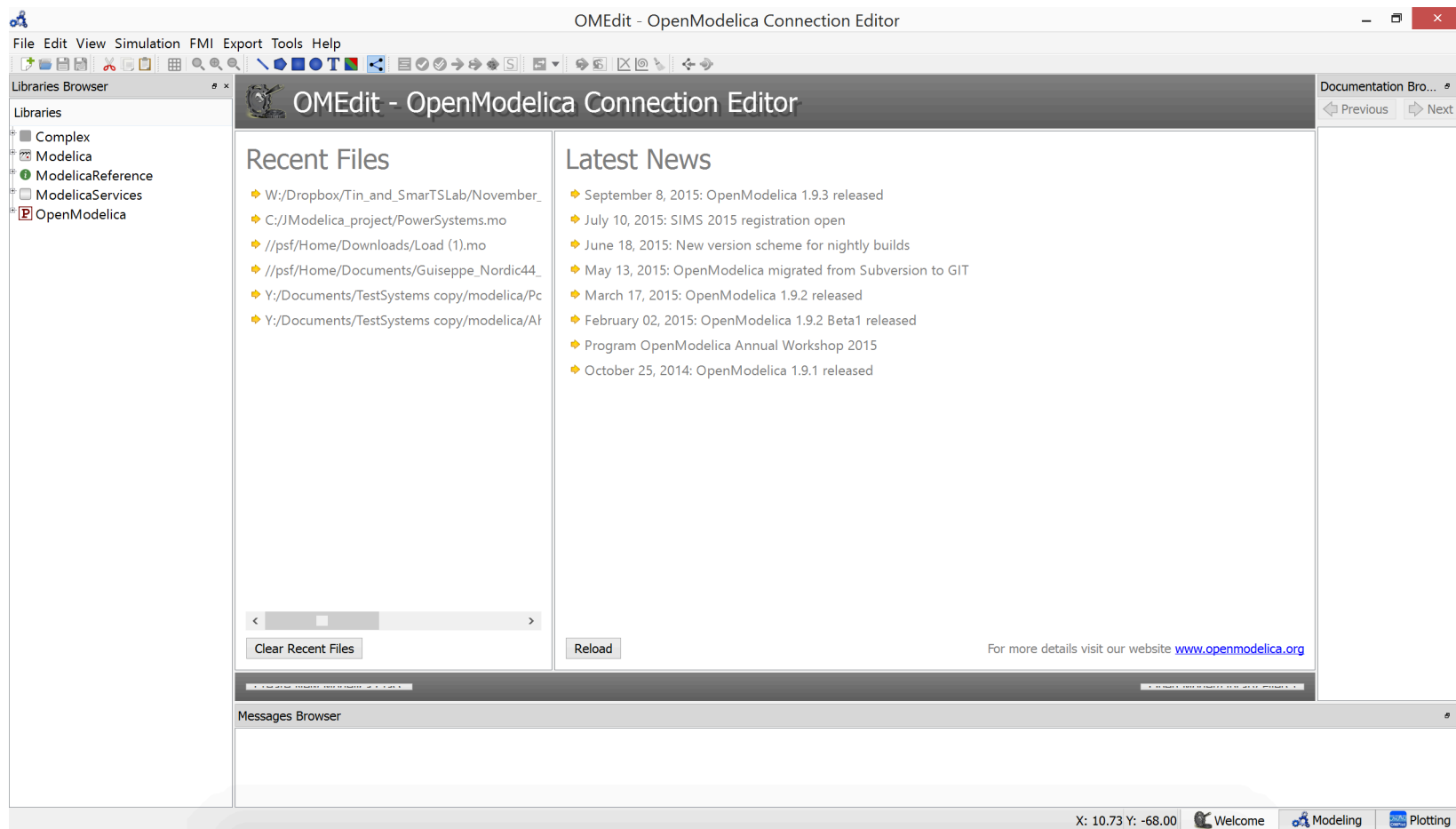
- **Note!** Compatibility with iPSL is checked for OpenModelica version 1.9.3

# Check of OpenModelica

1. Start OpenModelica Connection Editor (OMEdit)
2. In the Libraries Browser navigate to Modelica.Blocks.Examples.PIDController
3. Select Runge Kutta as a solver and simulate the model
4. In the “Plotting” view, plot variable speedSensor.w

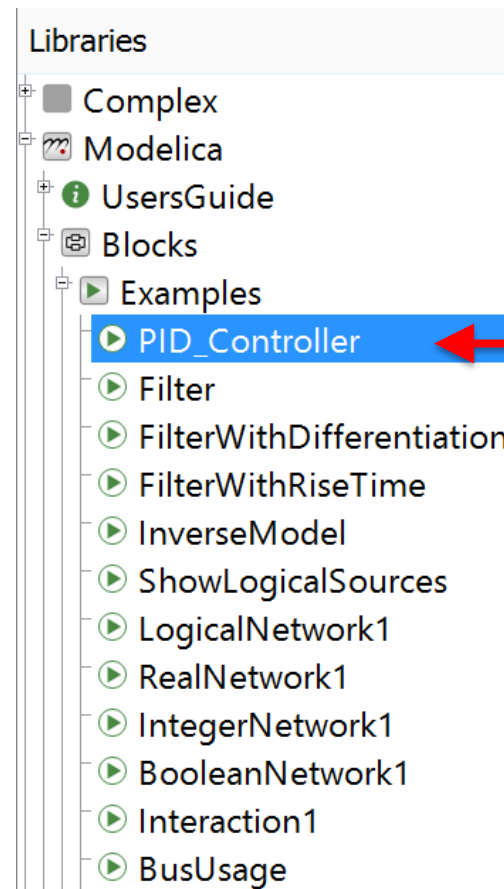
# Check of OpenModelica

## Step 1:



# Check of OpenModelica

Step 2:



Double-click to  
open

# Check of OpenModelica

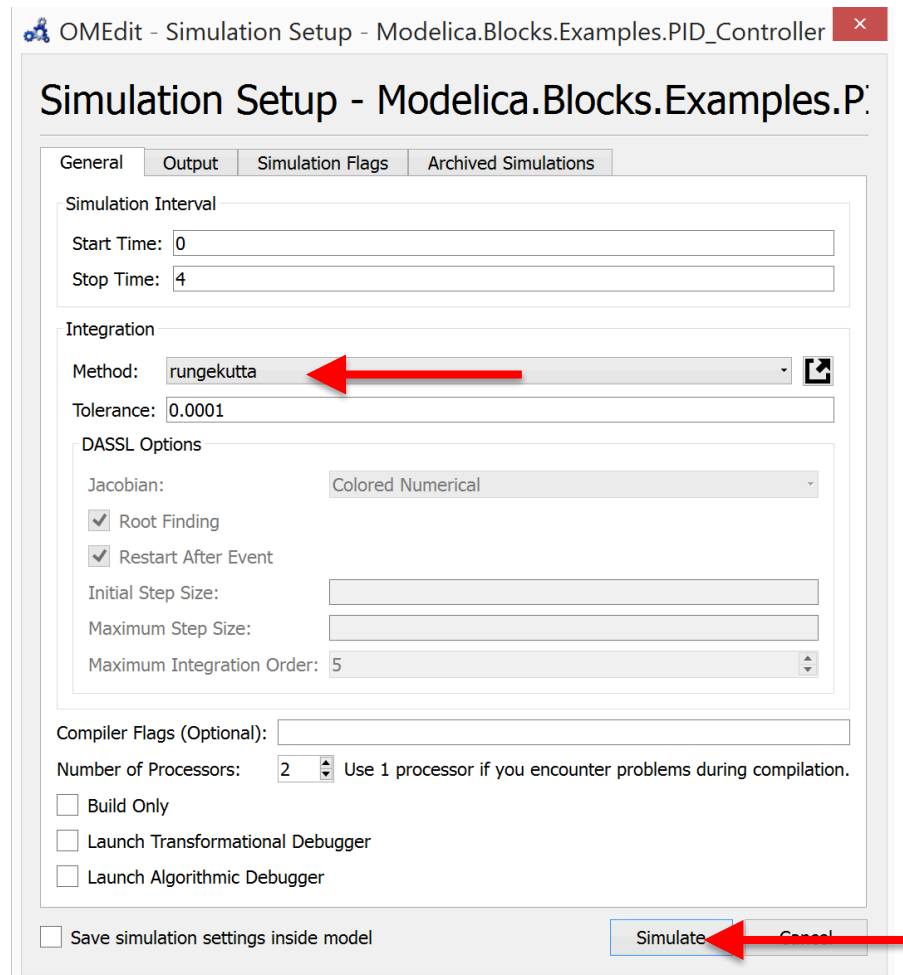
Step 3a:

Simulation settings are accessed on the toolbar:



# Check of OpenModelica

## Step 3b:

The image shows the "Simulation Setup" dialog box in OpenModelica. The title bar reads "OMEdit - Simulation Setup - Modelica.Blocks.Examples.PID\_Controller". The dialog has four tabs: "General", "Output", "Simulation Flags", and "Archived Simulations". The "General" tab is active. It contains sections for "Simulation Interval" (Start Time: 0, Stop Time: 4), "Integration" (Method: rungekutta, Tolerance: 0.0001), and "DASSL Options" (Jacobian: Colored Numerical, Root Finding checked, Restart After Event checked, Initial Step Size, Maximum Step Size, Maximum Integration Order: 5). At the bottom, there are checkboxes for "Compiler Flags (Optional)", "Number of Processors" (set to 2), "Build Only", "Launch Transformational Debugger", "Launch Algorithmic Debugger", and "Save simulation settings inside model". A red arrow points to the "rungekutta" method in the "Integration" section, and another red arrow points to the "Simulate" button at the bottom right.

OMEdit - Simulation Setup - Modelica.Blocks.Examples.PID\_Controller

### Simulation Setup - Modelica.Blocks.Examples.P.

General Output Simulation Flags Archived Simulations

Simulation Interval

Start Time: 0

Stop Time: 4

Integration

Method: rungekutta

Tolerance: 0.0001

DASSL Options

Jacobian: Colored Numerical

☒ Root Finding

☒ Restart After Event

Initial Step Size:

Maximum Step Size:

Maximum Integration Order: 5

Compiler Flags (Optional):

Number of Processors: 2 Use 1 processor if you encounter problems during compilation.

☐ Build Only

☐ Launch Transformational Debugger

☐ Launch Algorithmic Debugger

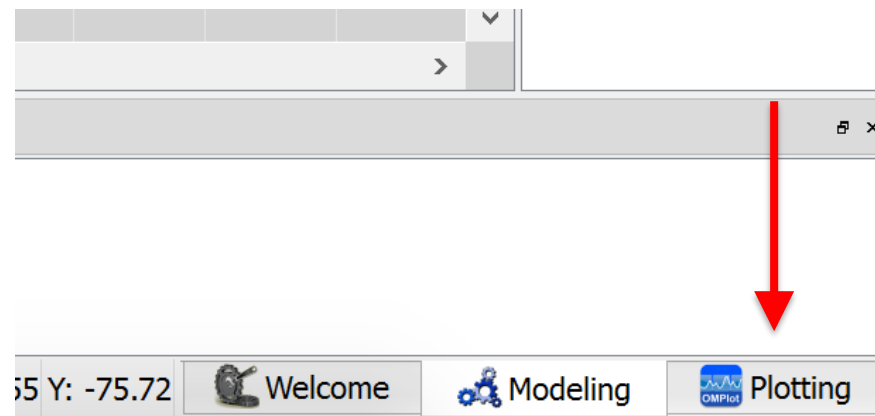
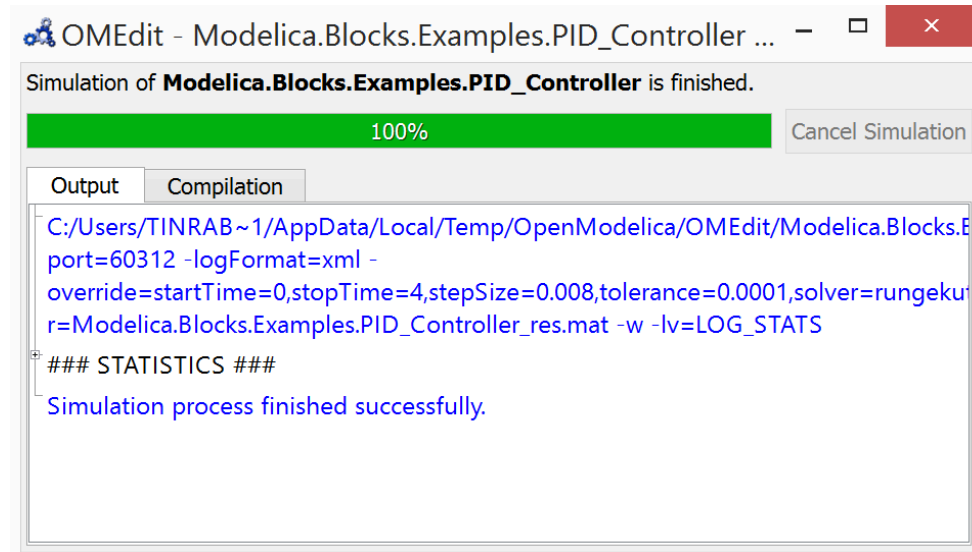
☐ Save simulation settings inside model

Simulate Cancel



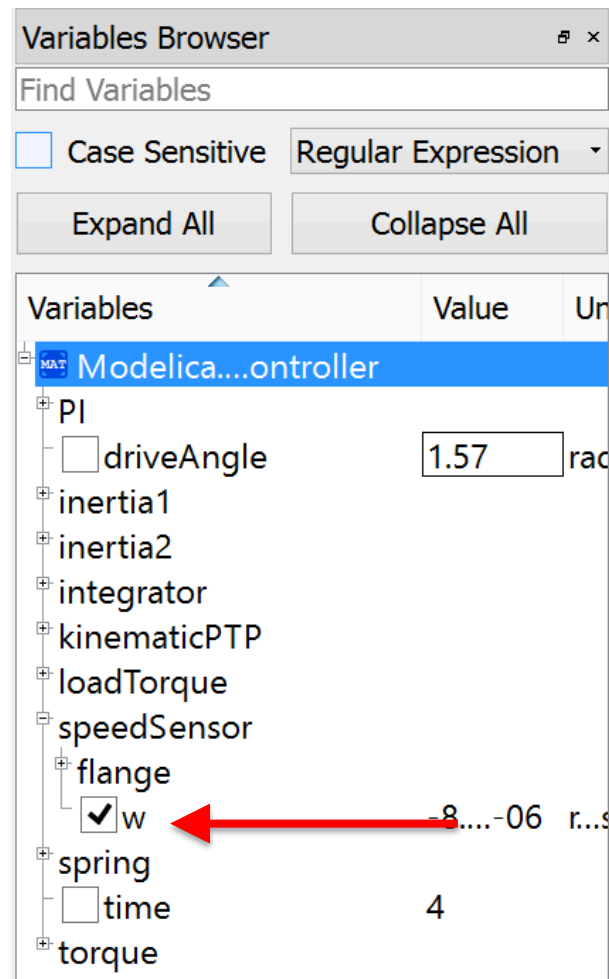
# Check of OpenModelica

## Step 4a:



# Check of OpenModelica

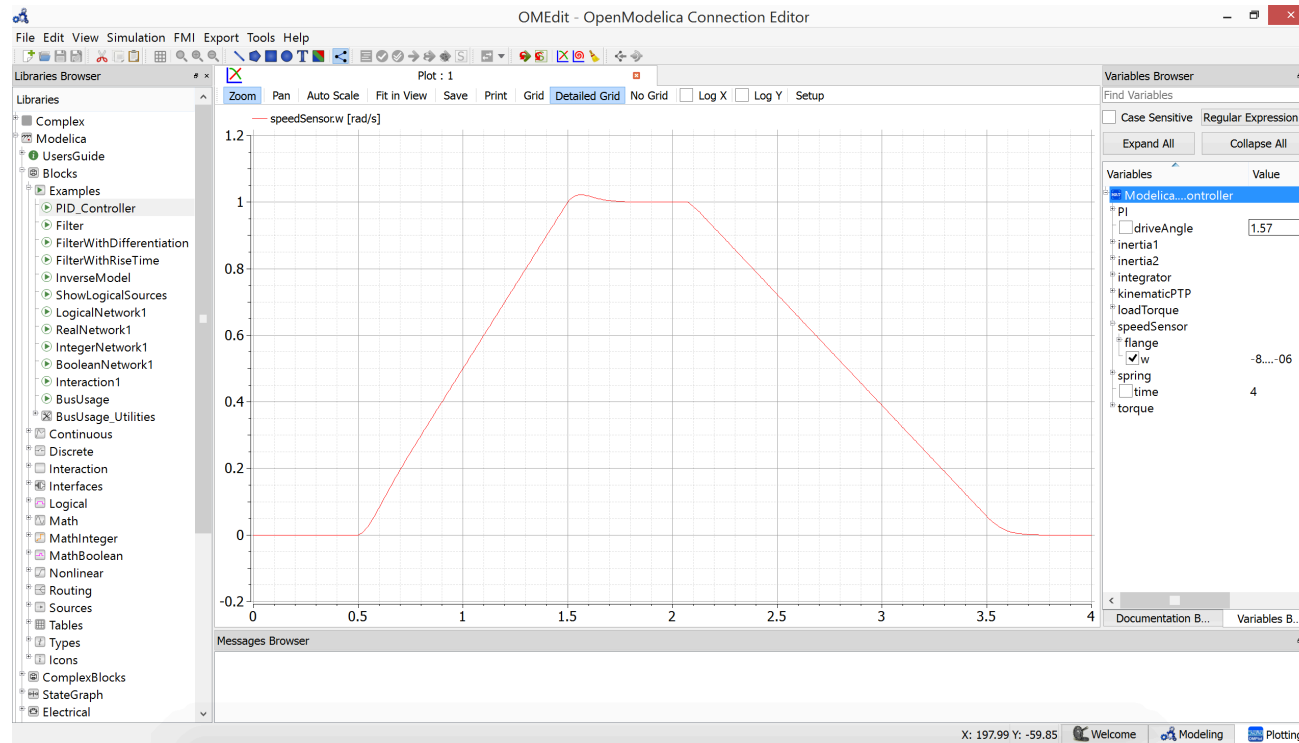
Step 4b:

The image shows a screenshot of the "Variables Browser" window in OpenModelica. The window has a title bar with a maximize button and a close button. Below the title bar is a search field labeled "Find Variables". There are two checkboxes: "Case Sensitive" (unchecked) and "Regular Expression" (checked). Below these are two buttons: "Expand All" and "Collapse All". The main area is a table with columns "Variables", "Value", and "Unit". The table lists various variables in a hierarchical tree structure. The variable "w" is highlighted with a red arrow pointing to its value, which is "-8....-06 r...".

Variables	Value	Unit
Modelica....ontroller		
PI		
driveAngle	1.57	rad
inertia1		
inertia2		
integrator		
kinematicPTP		
loadTorque		
speedSensor		
flange		
w	-8....-06	r...
spring		
time	4	
torque		

# Check of OpenModelica

## Step 4c:



- If your screen looks like this, you're ready to go!