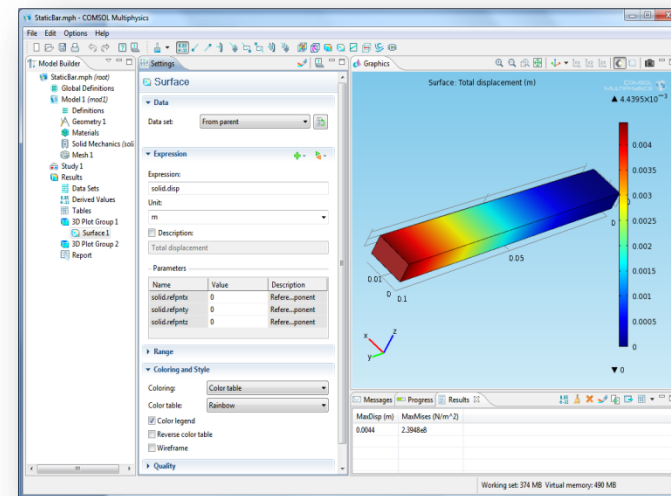
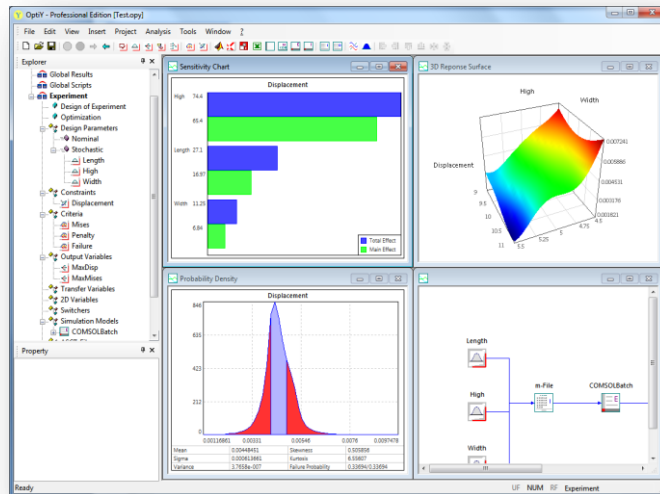
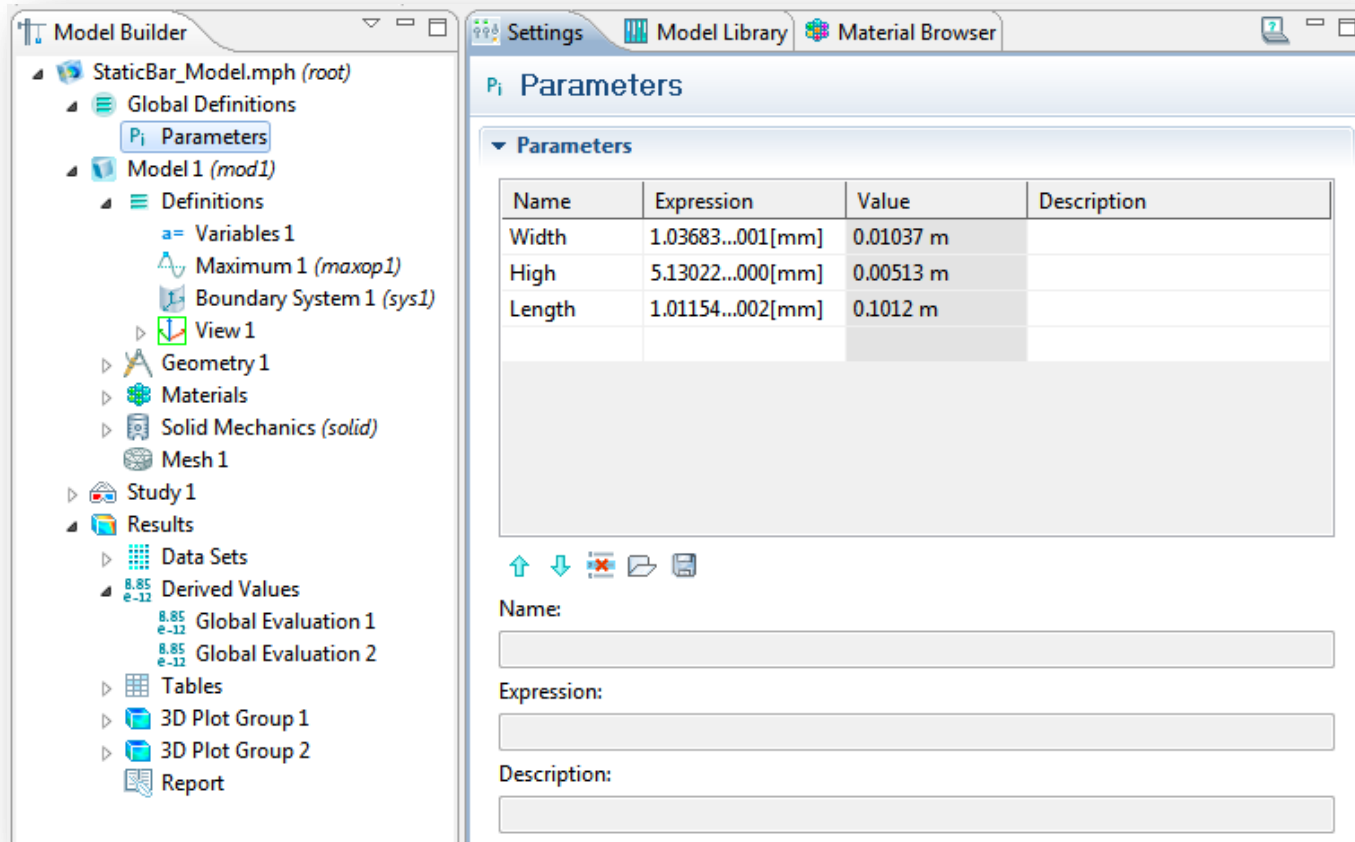


Coupling Tutorial OptiY® – COMSOL Multiphysics®

OptiY GmbH - Germany



COMSOL Step1: Define Global Parameters



Model Builder

- StaticBar_Model.mph (root)
 - Global Definitions
 - Parameters**
 - Model 1 (mod1)
 - Definitions
 - a= Variables 1
 - Maximum 1 (maxop1)
 - Boundary System 1 (sys1)
 - View 1
 - Geometry 1
 - Materials
 - Solid Mechanics (solid)
 - Mesh 1
 - Study 1
 - Results
 - Data Sets
 - Derived Values
 - Global Evaluation 1
 - Global Evaluation 2
 - Tables
 - 3D Plot Group 1
 - 3D Plot Group 2
 - Report

Parameters

Name	Expression	Value	Description
Width	1.03683...001[mm]	0.01037 m	
High	5.13022...000[mm]	0.00513 m	
Length	1.01154...002[mm]	0.1012 m	

↑ ↓ ↻ ↵ 📁

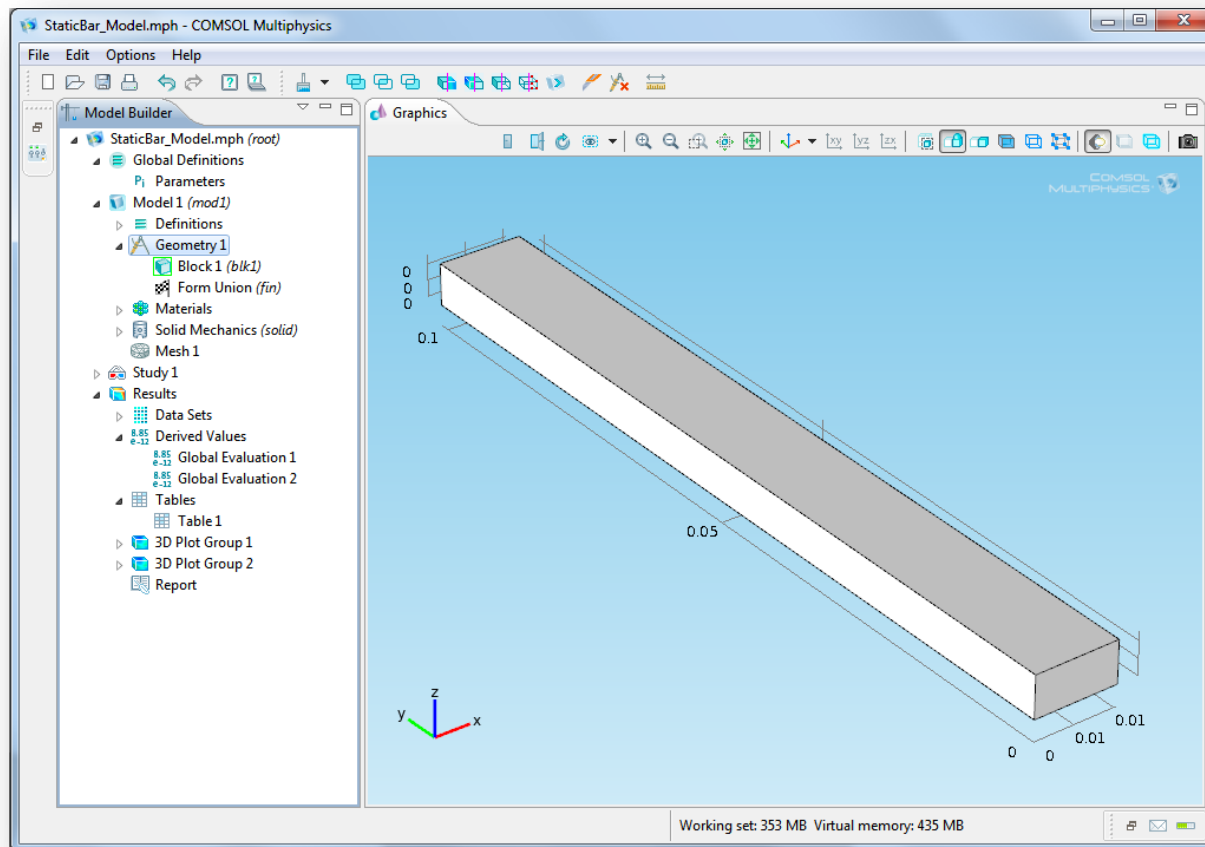
Name:

Expression:

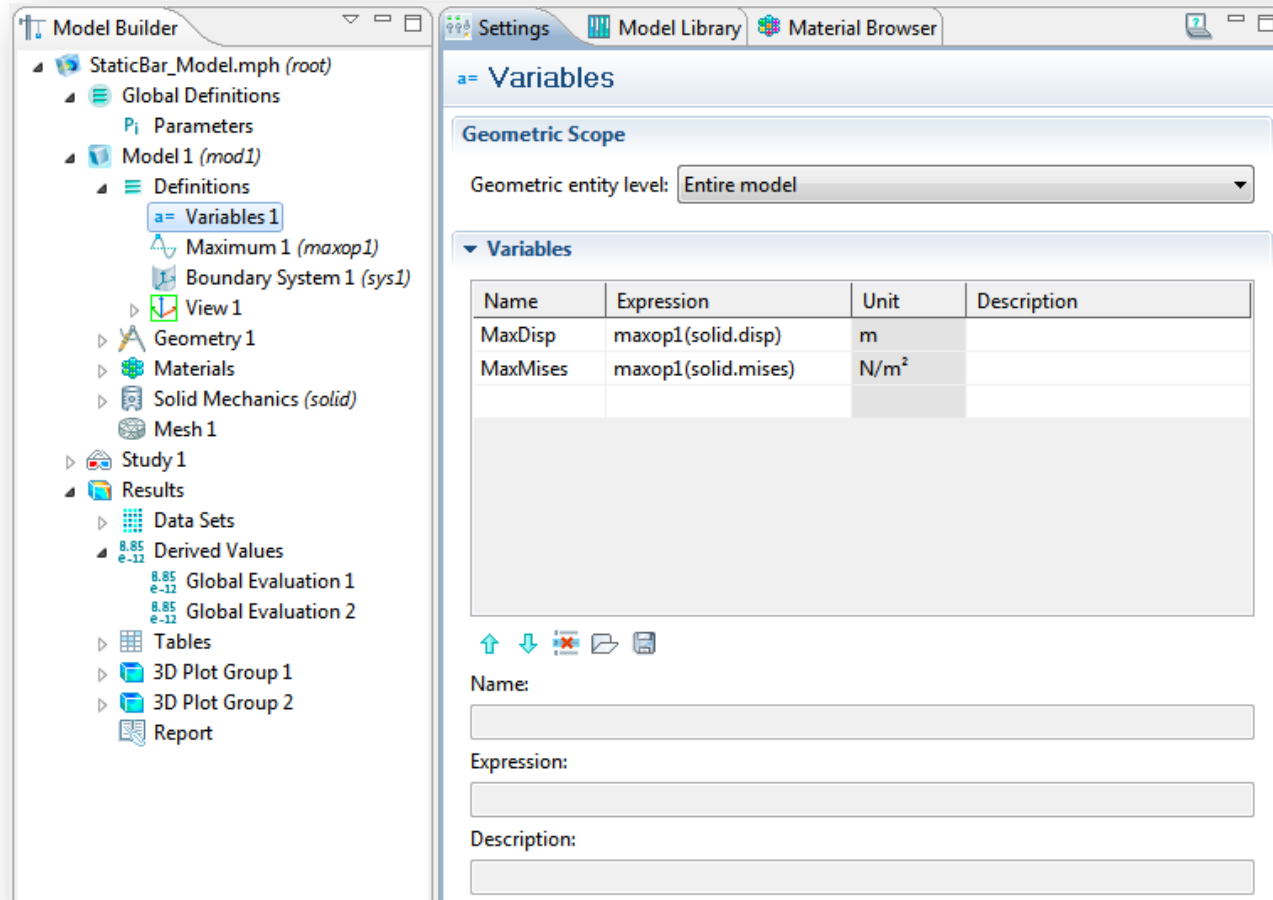
Description:

COMSOL Step 2: Build Geometry and Set Material

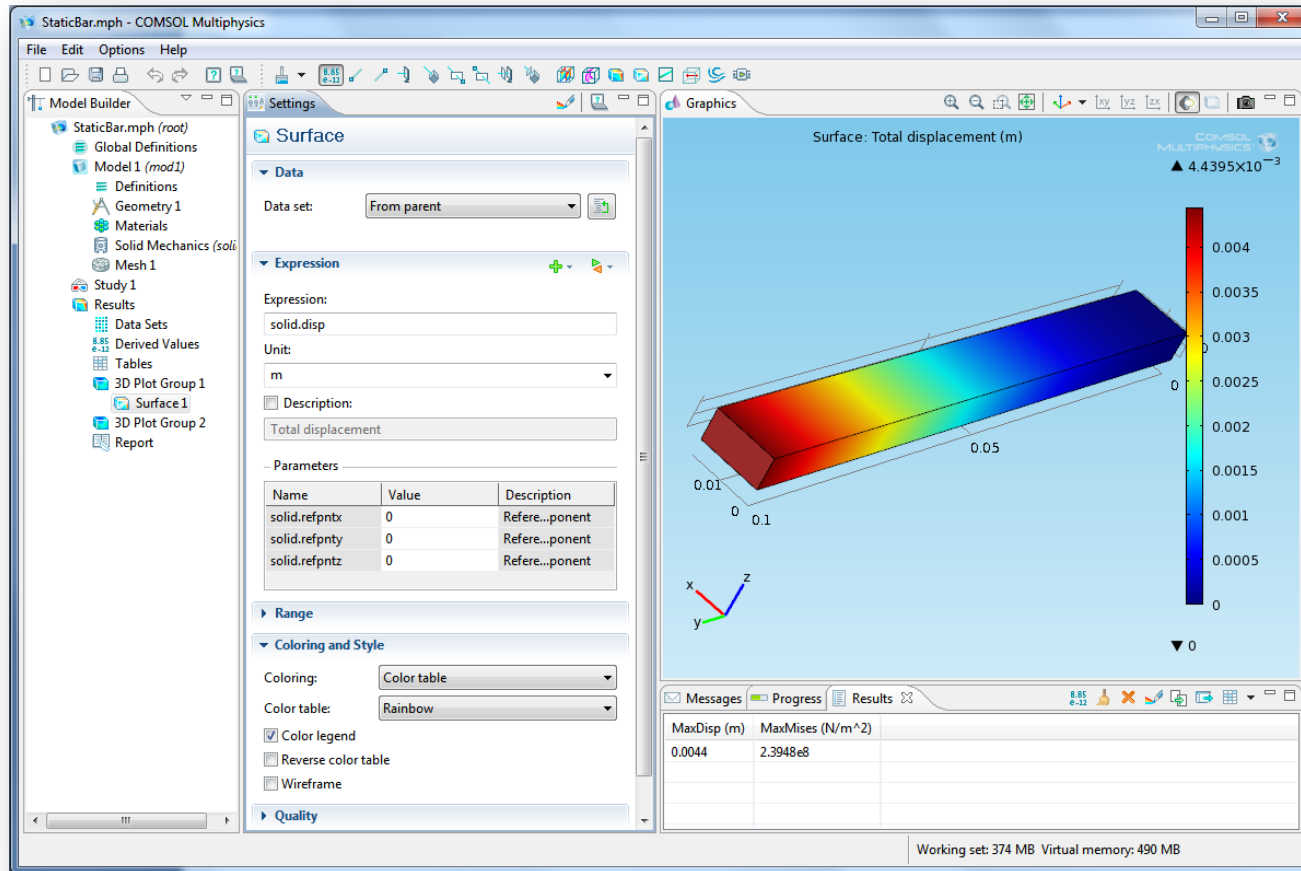
Use the defined parameters for building the model geometry and setting the material properties to get a parameterized model



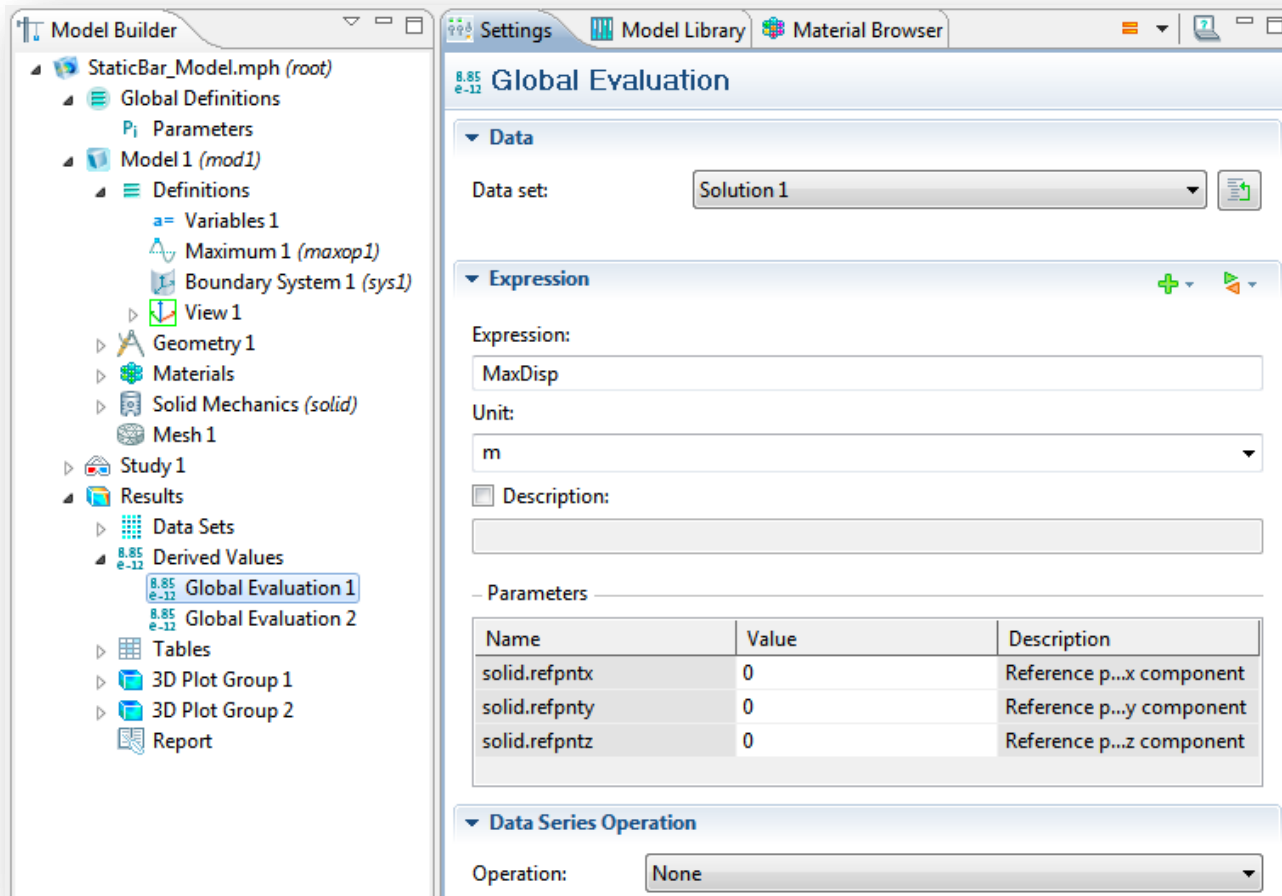
COMSOL Step 3: Define Variables for the Model



COMSOL Step 4: Setting Study and Computing



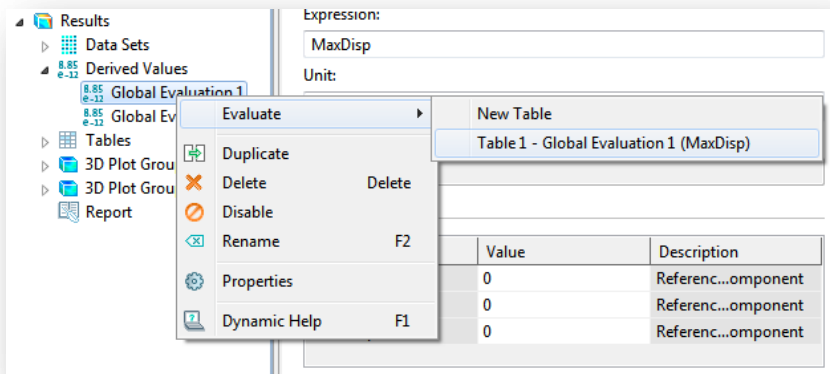
COMSOL Step 5: Define Derived Values



Design Evaluation:

- Volume Integration
- Surface Integration
- Line Integration
- Point Evaluation
- Global Evaluation: based on the defined model variables

COMSOL Step 6: Evaluate All Derived Values in one Table



The screenshot shows the 'Results' tab in COMSOL. The 'Table 1 - Global Evaluation 1 (MaxDisp)' is displayed. The table has two columns: 'MaxDisp (m)' and 'MaxMises (N/m^2)'. The first row contains the values 0.0041 and 2.0622e8. An 'Export' button is visible in the top right corner.

MaxDisp (m)	MaxMises (N/m ²)
0.0041	2.0622e8

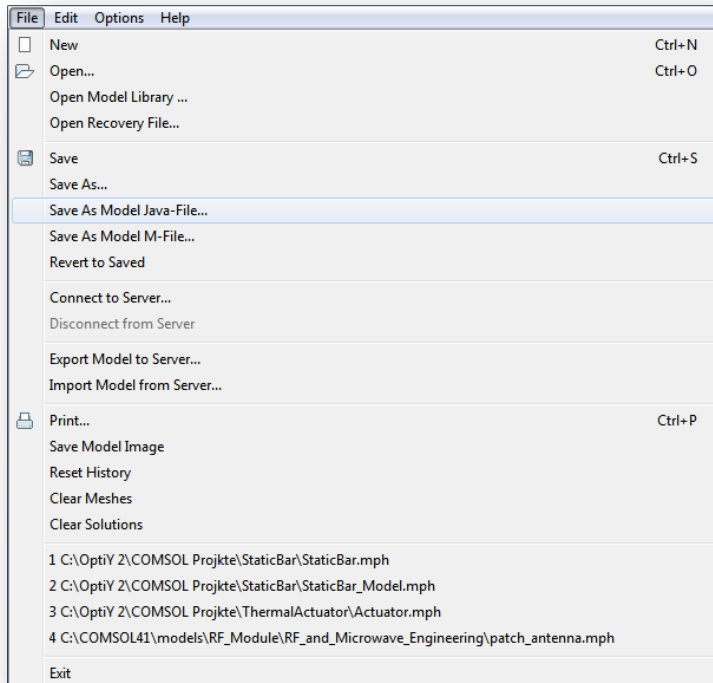
Evaluate all derive values
in **one table**

Export the table
to a text file (e.g. **Results.txt**)



```
% Model:
% Version:      COMSOL 4.1.0.185
% Date:        May 13 2011, 09:59
% Table:       Table 1 - Global Evaluation 1 (MaxDisp)
% MaxDisp (m)  MaxMises (N/m^2)
0.004096222910633273  2.06215840477051E8
```

COMSOL Step 7: Save The Model to Java File



```
import com.comsol.model.*;
import com.comsol.model.util.*;

/** Model exported on May 12 2011, 16:17 by COMSOL 4.1.0.185. */
public class StaticBar {

    public static void main(String[] args) {
        run();
    }

    public static Model run() {
        Model model = ModelUtil.create("Model");

        model.modelPath("C:\\OptiY 2\\COMSOL Projekte\\StaticBar");

        model.param().set("Width", "1.036830E+001[mm]");
        model.param().set("High", "5.130229E+000[mm]");
        model.param().set("Length", "1.011540E+002[mm]");

        model.modelNode().create("mod1");

        model.geom().create("geom1", 3);

        model.mesh().create("mesh1", "geom1");

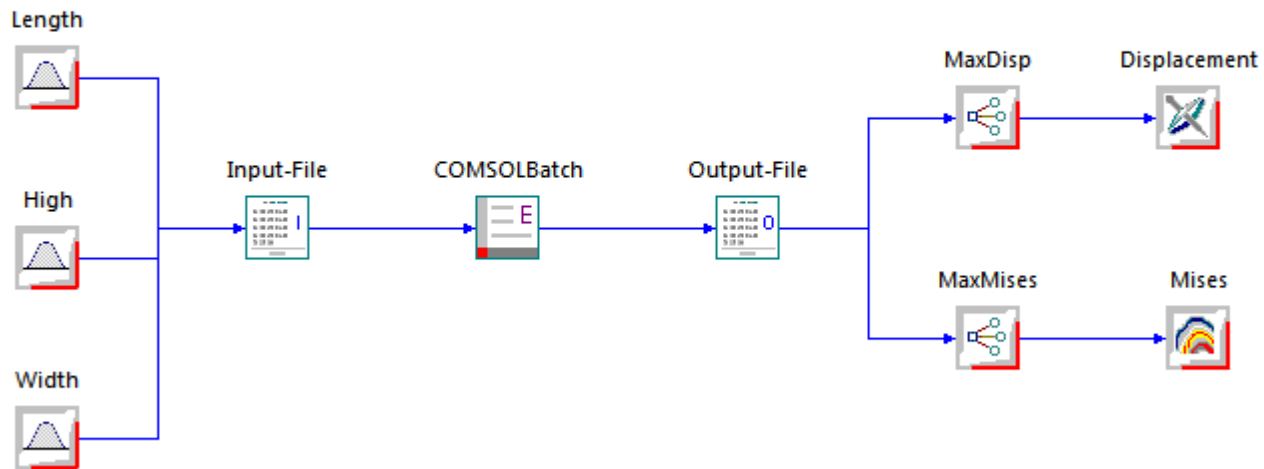
        model.physics().create("solid", "SolidMechanics", "geom1");
    }
}
```

Check for important parts of the Java file (e.g **StaticBar.java**) required in OptiY:

- Setting the model parameter
Model.param().set("Width", "10[mm]")
- Check computing codes to avoid unnecessary multiple computing
- Save the table to a text file
model.result().table("tbl1").save("Results.txt");

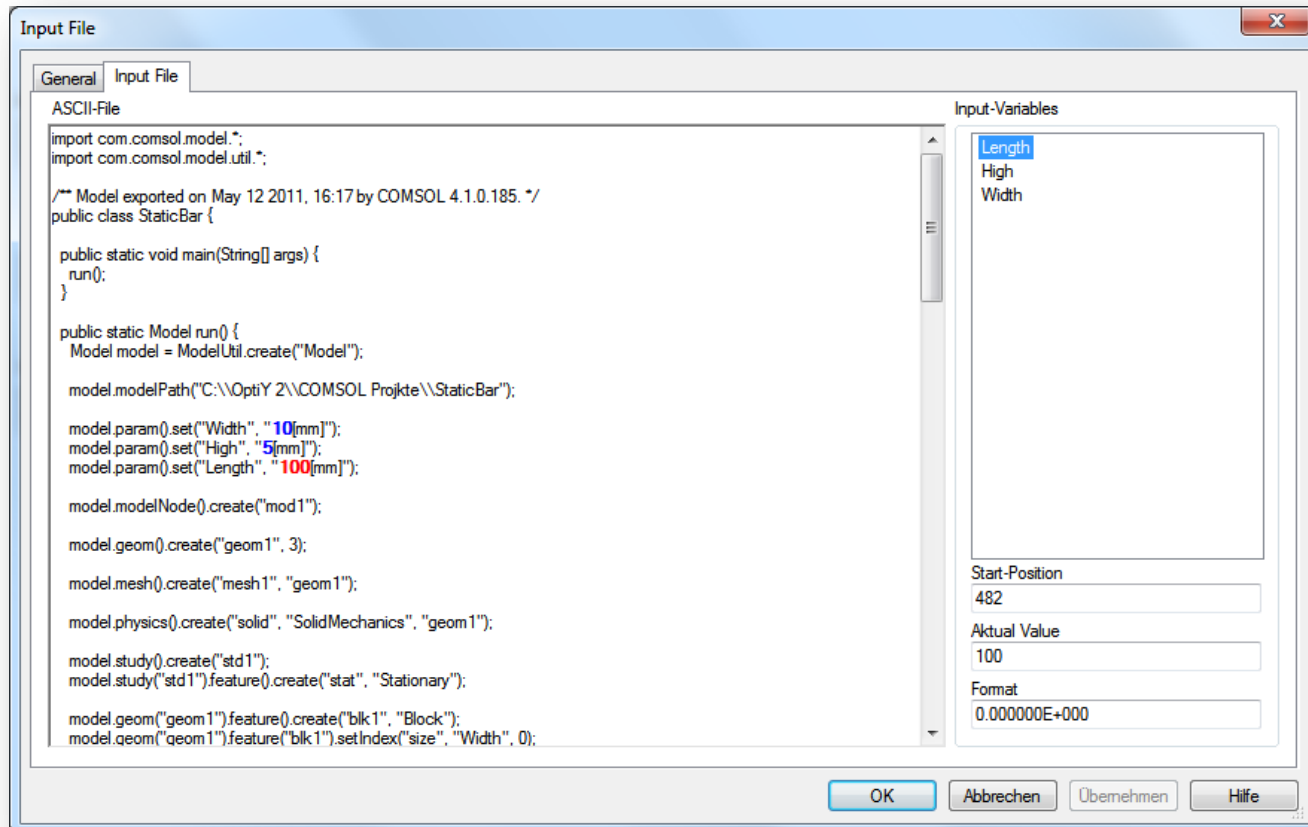
OptiY Step 1: Build the Workflow

Watching the video “Design of Experiment” on <http://www.optiy.eu/Demo.htm>



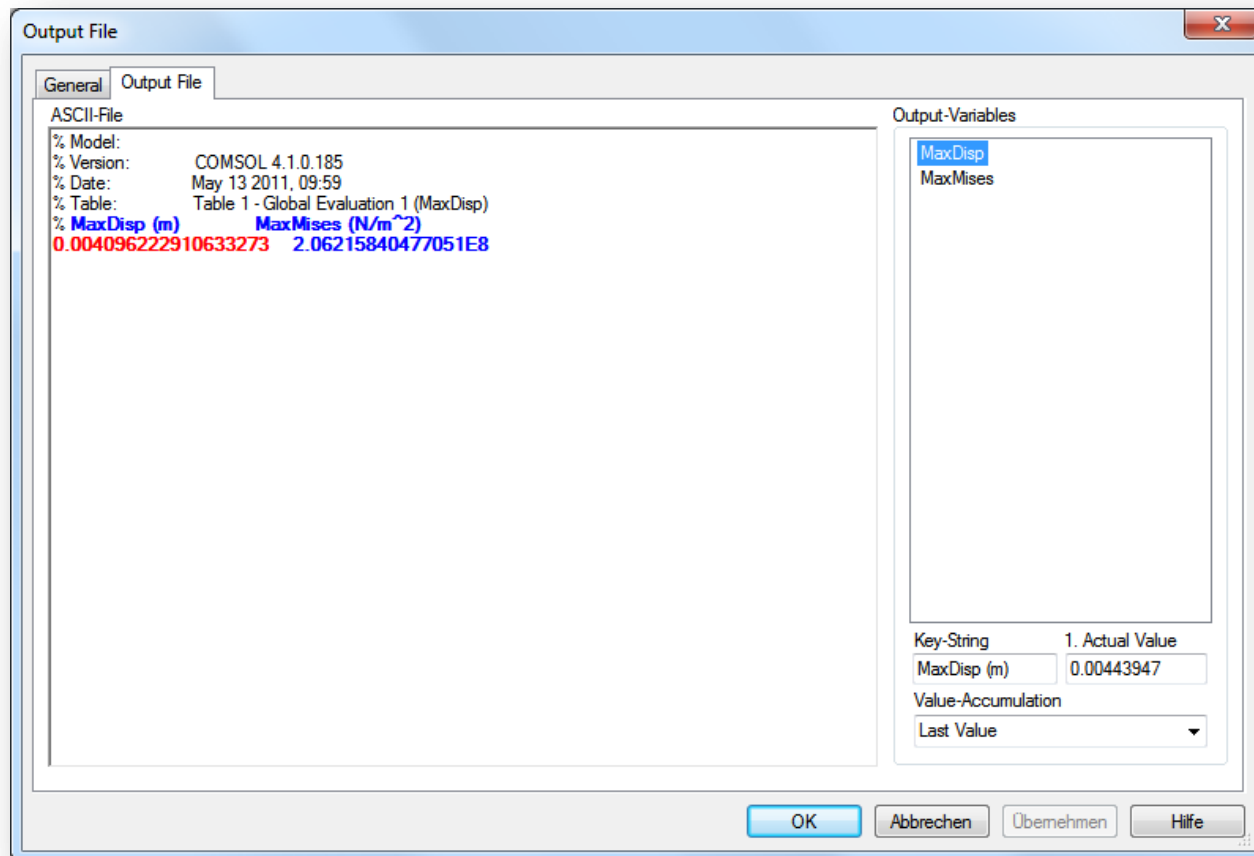
OptiY Step 2: Load the Java File to Input-File

Assign the OptiY input-variables to the COMSOL model parameters

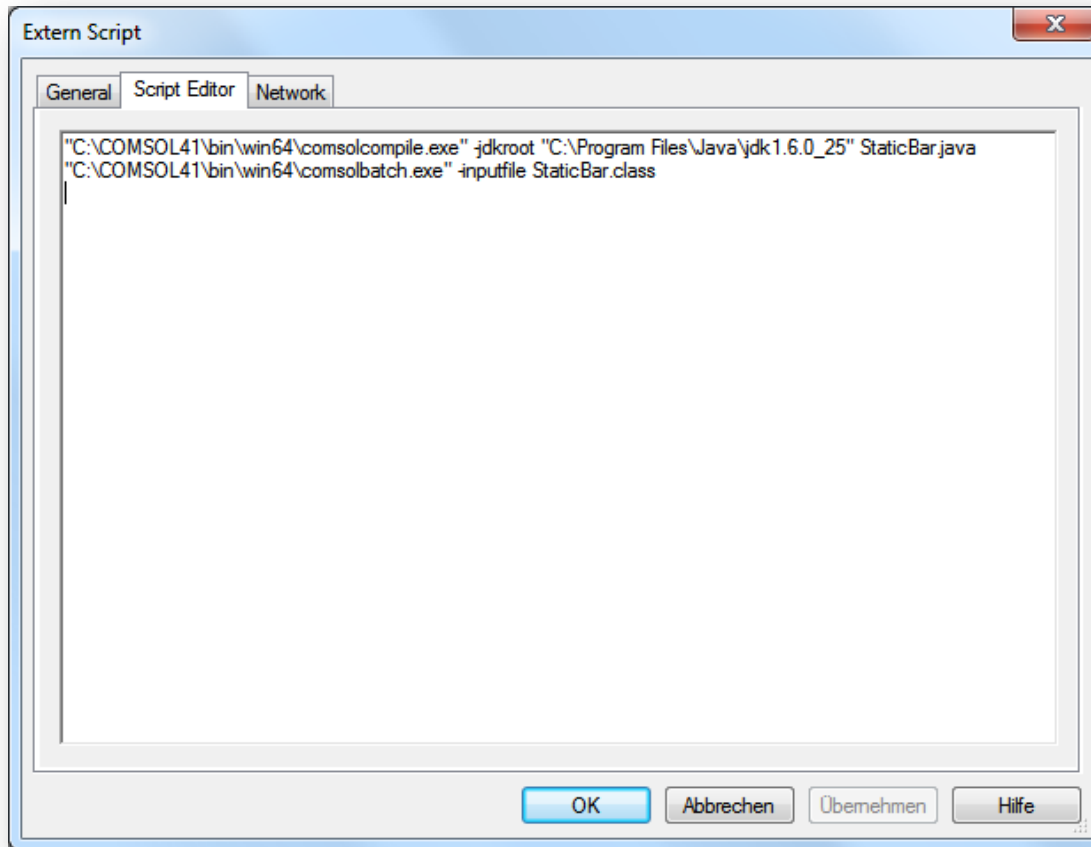


OptiY Step 3: Load the Text File to Output-File

Assign the OptiY output-variables to the COMSOL results



OptiY Step 4: Setting Extern Script



- Java Development Kit (JDK) is required additionally. Free download from www.oracle.com and install it on the computer

- Root path of JDK:
"C:\Program Files\Java\jdk1.6.0_25"

- Use **comsolcompile.exe** to compile the Java File (**StaticBar.java**) to Class File (**StaticBar.class**)

- Start computing the model (**StaticBar.class**) in batch mode using **comsolbatch.exe**