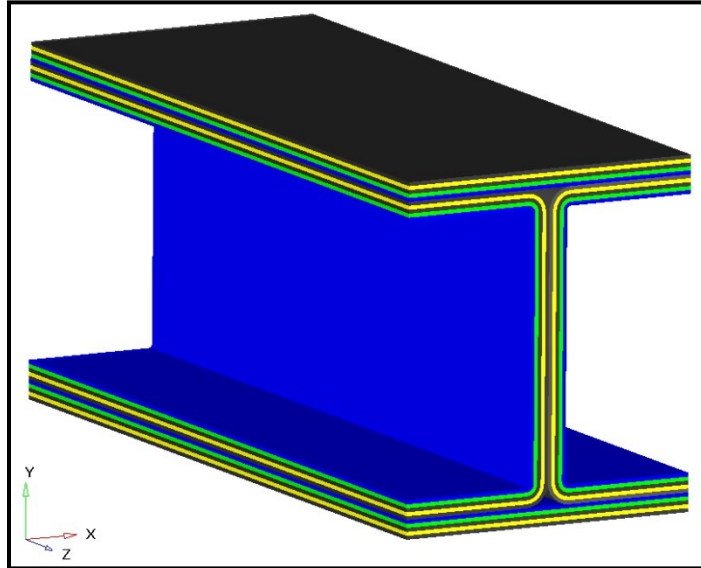


## Exercise 3H: Analysis of a PCOMPG Clamped I-Beam

This exercise has the user set up and perform a linear static analysis on a clamped I beam laminate using a PCOMPG . The I-beam web and flanges are of uniform thickness and made of twenty 1 mm plies with a complex layout.

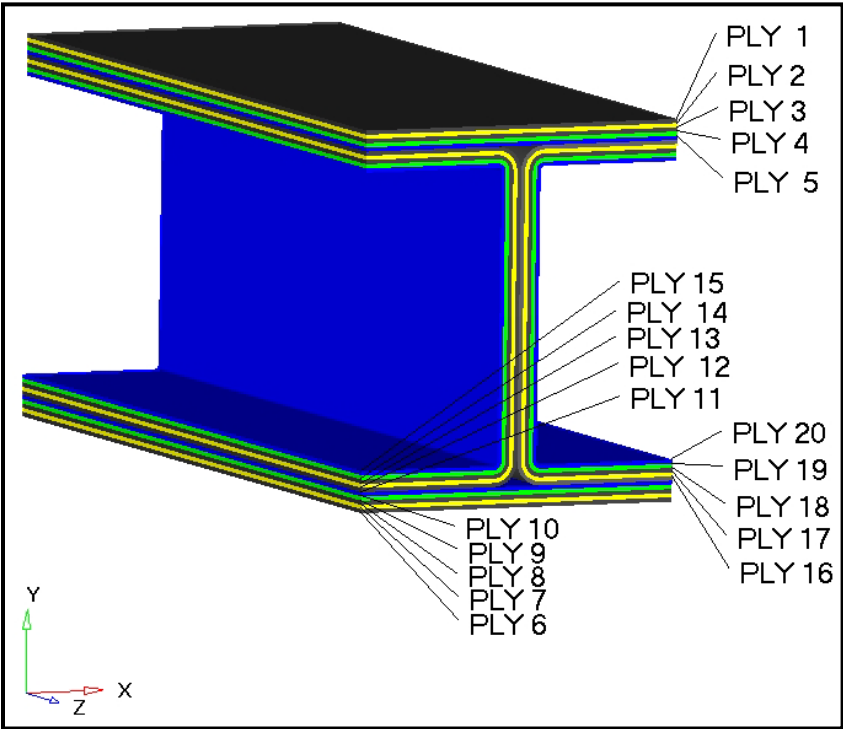


### Problem Setup

You should copy the file: `I_BEAM_COMPOSITE.hm`

**Step 1: Open the model in HyperMesh Desktop with the OptiStruct user profile**

**Step 2: Create the PCOMPG properties for the web and each individual flange according to the following layout**







Name	Value
Solver Keyword	PCOMPG
Name	Top Left
ID	1
Color	
Include	[Master Model]
Defined	<input checked="" type="checkbox"/>
Card Image	PCOMPG
User Comments	Hide In Menu/Export
<input checked="" type="checkbox"/> Z0 OPTIONS	REAL
Z0	
NSM	
SB	
FT	
TREF	
<input checked="" type="checkbox"/> GE_USEMAT	<input type="checkbox"/>
GE	
LAM	
<input checked="" type="checkbox"/> Number_of_Plies =	10
Data: GPLYID, ...	
NRPT	
PCOMPX	<input type="checkbox"/>

Number\_of\_Plies =





	GPLYID	MID	T	THETA	SOUT
1	15	(1) MAT8	1.0	90.0	YES
2	14	(1) MAT8	1.0	-45.0	YES
3	13	(1) MAT8	1.0	0.0	YES
4	12	(1) MAT8	1.0	45.0	YES
5	11	(1) MAT8	1.0	0.0	YES
6	5	(1) MAT8	1.0	90.0	YES
7	4	(1) MAT8	1.0	-45.0	YES
8	3	(1) MAT8	1.0	0.0	YES
9	2	(1) MAT8	1.0	45.0	YES
10	1	(1) MAT8	1.0	0.0	YES

Close

Name	Value
Solver Keyword	PCOMPG
Name	Top Right
ID	2
Color	
Include	[Master Model]
Defined	<input checked="" type="checkbox"/>
Card Image	PCOMPG
User Comments	Hide In Menu/Export
<input checked="" type="checkbox"/> Z0 OPTIONS	REAL
Z0	
NSM	
SB	
FT	
TREF	
<input checked="" type="checkbox"/> GE_USEMAT	
GE	
LAM	
<input checked="" type="checkbox"/> Number_of_Plies =	10
Data: GPLYID, ...	
NRPT	
PCOMPX	

Number_of_Plies =					
	GPLYID	MID	T	THETA	SOUT
1	20	(1) MAT8	1.0	90.0	YES
2	19	(1) MAT8	1.0	-45.0	YES
3	18	(1) MAT8	1.0	0.0	YES
4	17	(1) MAT8	1.0	45.0	YES
5	16	(1) MAT8	1.0	0.0	YES
6	5	(1) MAT8	1.0	90.0	YES
7	4	(1) MAT8	1.0	-45.0	YES
8	3	(1) MAT8	1.0	0.0	YES
9	2	(1) MAT8	1.0	45.0	YES
10	1	(1) MAT8	1.0	0.0	YES





Close

Name	Value
Solver Keyword	PCOMPG
Name	Web
ID	3
Color	
Include	[Master Model]
Defined	<input checked="" type="checkbox"/>
Card Image	PCOMPG
User Comments	Hide In Menu/Export
<input checked="" type="checkbox"/> Z0 OPTIONS	REAL
Z0	
NSM	
SB	
FT	
TREF	
<input checked="" type="checkbox"/> GE_USEMAT	
GE	
LAM	
<input checked="" type="checkbox"/> Number_of_Plies =	10
Data: GPLYID, ...	
NRPT	
PCOMPX	

Number_of_Plies =					
	GPLYID	MID	T	THETA	SOUT
1	20	(1) MAT8	1.0	90.0	YES
2	19	(1) MAT8	1.0	-45.0	YES
3	18	(1) MAT8	1.0	0.0	YES
4	17	(1) MAT8	1.0	45.0	YES
5	16	(1) MAT8	1.0	0.0	YES
6	11	(1) MAT8	1.0	0.0	YES
7	12	(1) MAT8	1.0	45.0	YES
8	13	(1) MAT8	1.0	0.0	YES
9	14	(1) MAT8	1.0	-45.0	YES
10	15	(1) MAT8	1.0	90.0	YES

Close





## Chapter 3: Composite Analysis Solutions Exercises

Name	Value
Solver Keyword	PCOMPG
Name	Bottom Left
ID	4
Color	
Include	[Master Model]
Defined	<input checked="" type="checkbox"/>
Card Image	PCOMPG
User Comments	Hide In Menu/Export
<input checked="" type="checkbox"/> Z0 OPTIONS	REAL
Z0	
NSM	
SB	
FT	
TREF	
<input checked="" type="checkbox"/> GE_USEMAT	
GE	
LAM	
<input checked="" type="checkbox"/> Number_of_Plies =	10
Data: GPLYID, ...	
NRPT	
PCOMPX	

Number\_of\_Plies =

	GPLYID	MID	T	THETA	SOUT
1	15	(1) MAT8	1.0	90.0	YES
2	14	(1) MAT8	1.0	-45.0	YES
3	13	(1) MAT8	1.0	0.0	YES
4	12	(1) MAT8	1.0	45.0	YES
5	11	(1) MAT8	1.0	0.0	YES
6	10	(1) MAT8	1.0	90.0	YES
7	9	(1) MAT8	1.0	-45.0	YES
8	8	(1) MAT8	1.0	0.0	YES
9	7	(1) MAT8	1.0	45.0	YES
10	6	(1) MAT8	1.0	0.0	YES

Close

Name	Value
Solver Keyword	PCOMPG
Name	Bottom Right
ID	5
Color	
Include	[Master Model]
Defined	<input checked="" type="checkbox"/>
Card Image	PCOMPG
User Comments	Hide In Menu/Export
<input checked="" type="checkbox"/> Z0 OPTIONS	REAL
Z0	
NSM	
SB	
FT	
TREF	
<input checked="" type="checkbox"/> GE_USEMAT	
GE	
LAM	
<input checked="" type="checkbox"/> Number_of_Plies =	10
Data: GPLYID, ...	
NRPT	
PCOMPX	

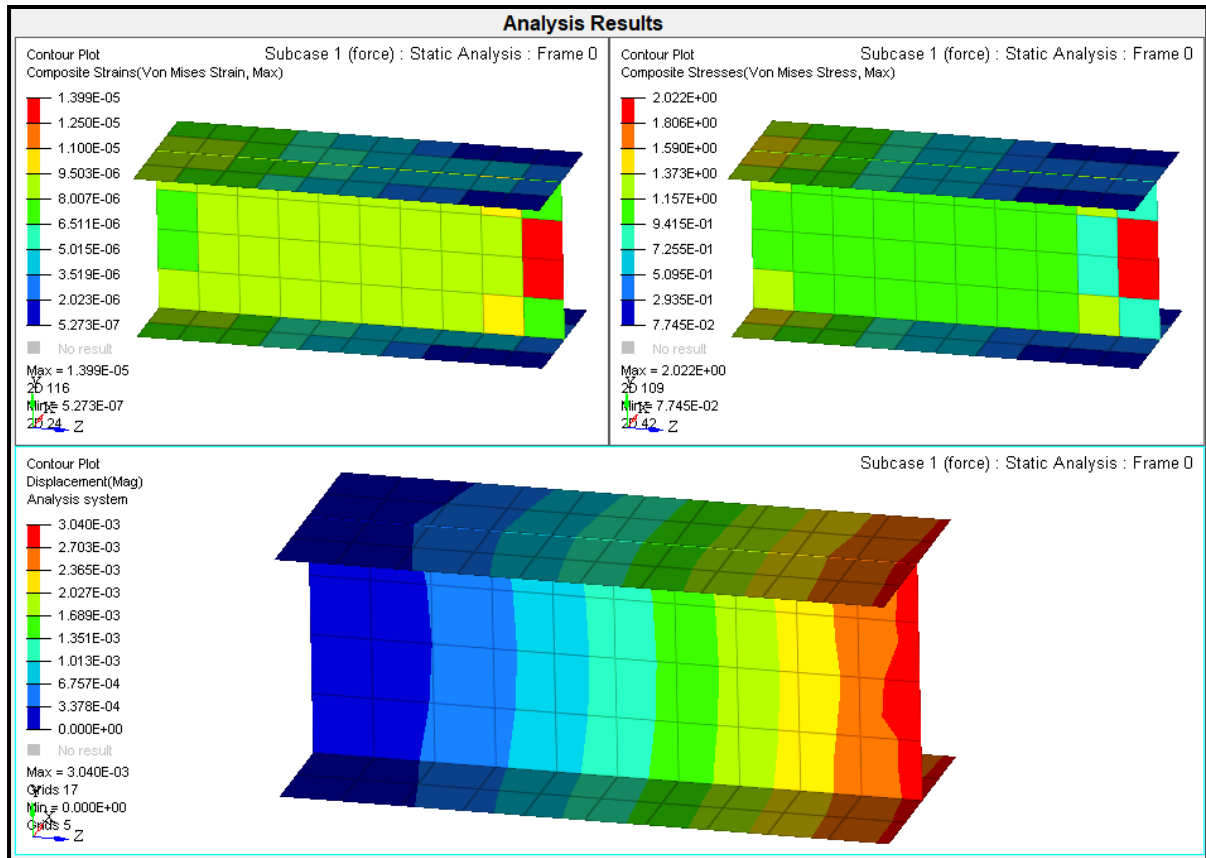
Number\_of\_Plies =

	GPLYID	MID	T	THETA	SOUT
1	20	(1) MAT8	1.0	90.0	YES
2	19	(1) MAT8	1.0	-45.0	YES
3	18	(1) MAT8	1.0	0.0	YES
4	17	(1) MAT8	1.0	45.0	YES
5	16	(1) MAT8	1.0	0.0	YES
6	10	(1) MAT8	1.0	90.0	YES
7	9	(1) MAT8	1.0	-45.0	YES
8	8	(1) MAT8	1.0	0.0	YES
9	7	(1) MAT8	1.0	45.0	YES
10	6	(1) MAT8	1.0	0.0	YES

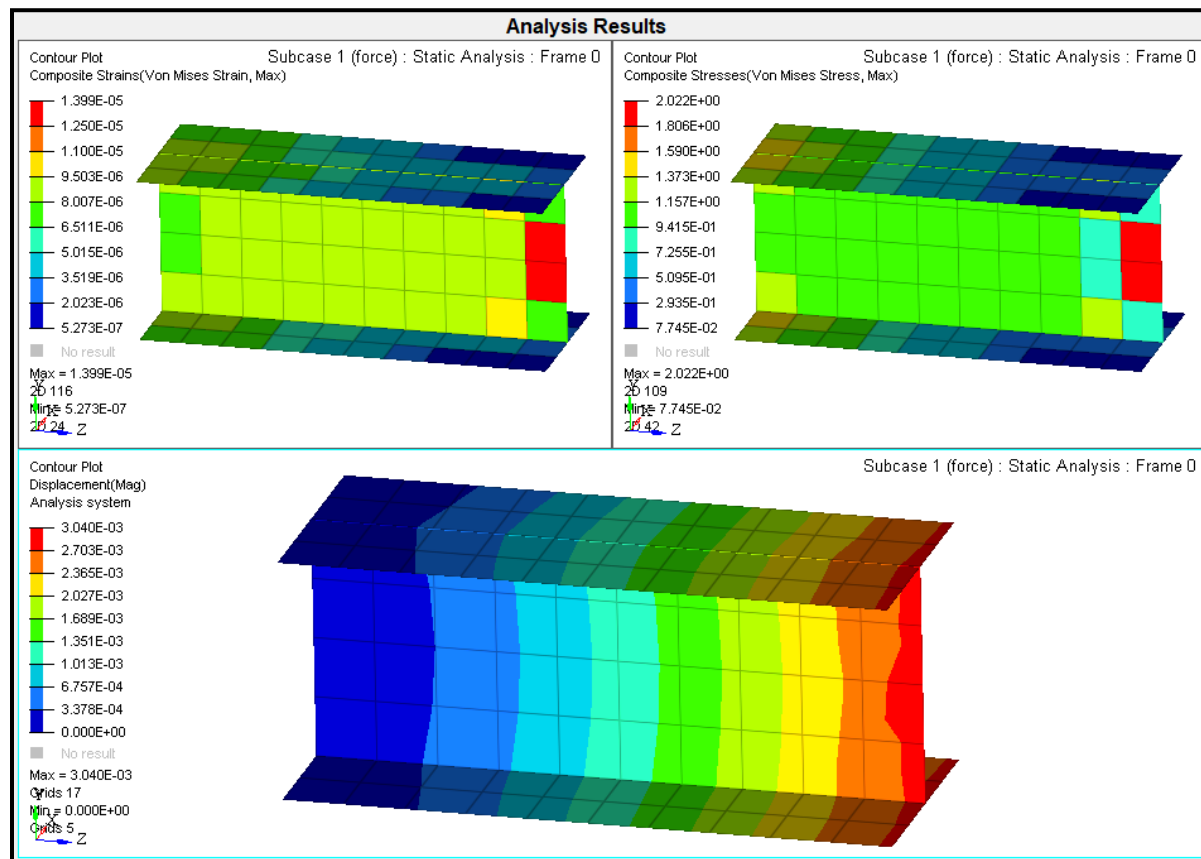
Close

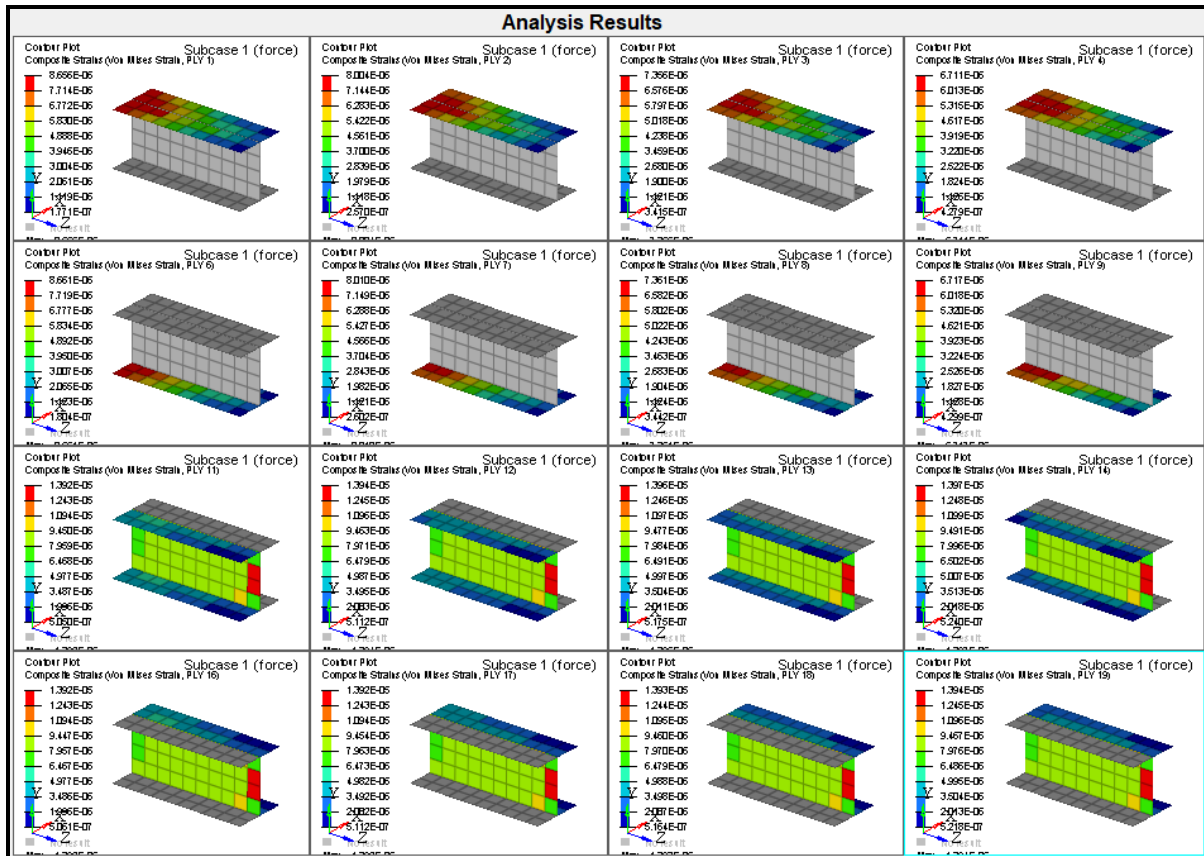
**Step 3: Assign the appropriate PCOMPG to the component it represents using the Model Browser**

**Step 4: Run the analysis and post-process the model results using HyperView**



## EXERCISE RESULTS: I\_BEAM\_COMPOSITE\_PCOMP.G.h3d





Contour plots of 16 of the 20 plies in the model, reviewing composite vonMises strain on each individual ply