

Dear Survey Participant,

The NAFEMS Composites Working Group would like to thank you for taking your time and providing you input to the recent survey. The results will help us to determine our future direction and to prioritize our activities.

On the following pages you will find a summary of the survey as promised to those who were kind enough to supply their email addresses. A more extensive report including an interpretation of the results and our future goals will be published later.

*NAMFEMS Composites WG*

**1. Which best describes your business area?**

		Response Percent	Response Count
Aerospace		34.7%	131
Automotive		14.3%	54
Wind Energy		2.9%	11
Supplier		4.5%	17
Sporting Goods		0.5%	2
Software Development		5.0%	19
Government Lab		4.2%	16
Commercial R&D		6.6%	25
University		12.2%	46
Other (please specify)		15.1%	57
		<b>answered question</b>	<b>378</b>
		<b>skipped question</b>	<b>7</b>



**2. What are the primary reasons your company uses composite materials instead of metals? (Check all that apply)**

		Response Percent	Response Count
Weight saving		84.4%	313
Strength		48.0%	178
Stiffness		46.4%	172
Corrosion		22.4%	83
Other (please specify)		23.2%	86
<b>answered question</b>			<b>371</b>
<b>skipped question</b>			<b>14</b>

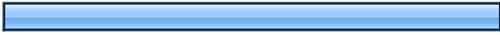


### 3. Which kind of composites do you use? (Check all that apply)

		Response Percent	Response Count
Short fibers		35.6%	131
Long fibers		43.5%	160
Continuous fibers		57.3%	211
<b>Woven fabric</b>		<b>61.1%</b>	<b>225</b>
Non-crimp fabric (NCF)		23.9%	88
Prepreg		56.0%	206
Hybrid (glass/carbon, TiGr)		23.9%	88
Fiber-metal laminates (GLARE, Arall)		9.2%	34
Knitted fabric		14.4%	53
Sheet molded compound (SMC)		14.7%	54
Other (please specify)		9.2%	34
		<b>answered question</b>	<b>368</b>
		<b>skipped question</b>	<b>17</b>



**4. What type of fiber material do you use? (Check all that apply)**

		Response Percent	Response Count
Carbon		82.4%	299
Glass		75.2%	273
Aramid		28.1%	102
Ceramic		11.3%	41
Metal		12.7%	46
Natural fiber		15.2%	55
Other (please specify)		4.4%	16
<b>answered question</b>			<b>363</b>
<b>skipped question</b>			<b>22</b>

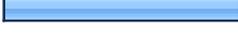


### 5. What type of matrix material do you use? (Check all that apply)

		Response Percent	Response Count
Thermoplastic polymer		62.4%	227
<b>Thermoset polymer</b>		<b>76.1%</b>	<b>277</b>
Metal		7.1%	26
Glass		6.0%	22
Ceramic		10.2%	37
Carbon		11.0%	40
Biodegradable		6.3%	23
Other (please specify)		3.3%	12
		<b>answered question</b>	<b>364</b>
		<b>skipped question</b>	<b>21</b>



## 6. Which manufacturing process do you typically use? (Check all that apply)

		Response Percent	Response Count
Autoclave		55.4%	196
Room temperature cure		31.6%	112
Transfer molding (e.g. VARTM)		40.4%	143
Injection molding		40.4%	143
Pultrusion		12.4%	44
Automatic fibre placement		20.1%	71
Draping		19.2%	68
Filament winding		23.2%	82
Wet lay-up (hand)		35.3%	125
Other (please specify)		11.9%	42
<b>answered question</b>			<b>354</b>
<b>skipped question</b>			<b>31</b>



**7. Which are the most important performance indicators? (Check all that apply)**

		Response Percent	Response Count
Failure		71.3%	256
Stiffness		66.0%	237
Fatigue		47.1%	169
Weight		65.2%	234
Strength		69.9%	251
Other (please specify)		8.6%	31
		<b>answered question</b>	<b>359</b>
		<b>skipped question</b>	<b>26</b>



**8. How important is it to you to control the following?**

	Unimportant	Slightly important	Moderately important	Very important	Extremely important	Rating Average	Response Count
Cure-cycle/cure kinetics	9.3% (30)	15.2% (49)	28.9% (93)	<b>31.7% (102)</b>	14.9% (48)	3.28	
Warpage	3.7% (12)	9.3% (30)	24.5% (79)	<b>45.5% (147)</b>	17.0% (55)	3.63	
Spring-in	7.7% (24)	13.4% (42)	33.9% (106)	<b>37.1% (116)</b>	8.0% (25)	3.24	
Fiber Misalignment	4.9% (16)	9.2% (30)	24.3% (79)	<b>44.6% (145)</b>	16.9% (55)	3.59	
Fiber Waviness	8.5% (26)	10.8% (33)	26.8% (82)	<b>39.5% (121)</b>	14.4% (44)	3.41	
Other (specify below)	20.9% (9)	9.3% (4)	23.3% (10)	11.6% (5)	<b>34.9% (15)</b>	3.30	

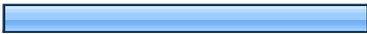
Other

answered question

skipped question



**9. What finite element software do you use for analyses? (Check all that apply)**

		Response Percent	Response Count
ABAQUS		55.0%	183
ANSYS		32.7%	109
NASTRAN		45.6%	152
Marc		7.8%	26
ESRD Stress Check		2.7%	9
SAMCEF		5.1%	17
LS-DYNA		25.5%	85
Other (please specify)		20.1%	67
		<b>answered question</b>	<b>333</b>
		<b>skipped question</b>	<b>52</b>



**10. What pre-processors do you use to create the models? (Check all that apply)**

		Response Percent	Response Count
PATRAN		29.8%	98
I-DEAS		5.2%	17
<b>ABAQUS CAE</b>		<b>40.1%</b>	<b>132</b>
FEMAP		20.7%	68
HyperMesh		32.8%	108
ANSYS Workbench		26.7%	88
Other (please specify)		23.7%	78
<b>answered question</b>			<b>329</b>
<b>skipped question</b>			<b>56</b>

**11. What process simulation tool do you use for injection molding?**

		Response Percent	Response Count
<b>Moldflow</b>		<b>53.2%</b>	<b>75</b>
Moldex3D		23.4%	33
Sigmasoft		5.0%	7
Other (please specify)		31.2%	44
<b>answered question</b>			<b>141</b>
<b>skipped question</b>			<b>244</b>



**12. What process simulation do you use for compression molding?**

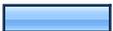
		Response Percent	Response Count
CADPRESS		27.5%	22
EXPRESS		11.3%	9
Other (please specify)		62.5%	50
		<b>answered question</b>	<b>80</b>
		<b>skipped question</b>	<b>305</b>

**13. What process simulation do you use for RTM?**

		Response Percent	Response Count
PAM-RTM		52.0%	51
Other (please specify)		48.0%	47
		<b>answered question</b>	<b>98</b>
		<b>skipped question</b>	<b>287</b>



#### 14. What process simulation do you use for draping?

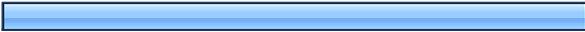
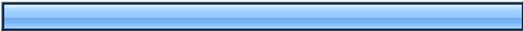
		Response Percent	Response Count
FiberSim		36.1%	57
Simulayt		15.8%	25
Catia CPD		28.5%	45
Other (please specify)		38.0%	60
answered question			158
skipped question			227

#### 15. What post-processors do you use to post-process your data? (Check all that apply)

		Response Percent	Response Count
PATRAN		29.3%	89
I-DEAS		4.6%	14
ABAQUS Viewer		45.7%	139
FEMAP		21.7%	66
HyperMesh		29.9%	91
Other (please specify)		30.6%	93
answered question			304
skipped question			81



## 16. What type of analysis do you typically perform? (Check all that apply)

		Response Percent	Response Count
Linear strain/stress		88.2%	291
Non-linear		78.5%	259
Buckling		57.6%	190
Heat transfer		23.3%	77
Fracture mechanics		34.8%	115
Progressive failure		37.3%	123
Curing modeling		12.4%	41
Fiber placement modeling		11.2%	37
Draping modeling		14.2%	47
Impact		36.7%	121
Ballistic		10.3%	34
Crash/crush		25.2%	83
Other (please specify)		6.4%	21
<b>answered question</b>			<b>330</b>
<b>skipped question</b>			<b>55</b>



**17. What material data do you use in your simulation? (Check all that apply)**

		Response Percent	Response Count
Mil-Hdbk-17/CMH-17 data		36.8%	118
MatWeb		22.1%	71
FE software material library		22.4%	72
Material data supplier		53.6%	172
<b>Own measurements</b>		<b>71.7%</b>	<b>230</b>
Other (please specify)		15.3%	49
		<b>answered question</b>	<b>321</b>
		<b>skipped question</b>	<b>64</b>

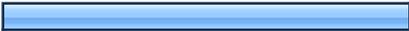


**18. Which of the following best describes your analysis approach? (Check all that apply)**

		Response Percent	Response Count
I trust my first analysis		6.5%	21
I run different models with different degrees of mesh-refinement		57.3%	185
I compare the results obtained from different models (shell/volume elements/...) and/or analyses (linear/non linear/buckling/...)		42.7%	138
I compare the results obtained from different FE-codes		13.3%	43
<b>I compare the FE results with experimental results</b>		<b>83.9%</b>	<b>271</b>
I perform a hand calculation		52.0%	168
Other (please specify)		4.6%	15
<b>answered question</b>			<b>323</b>
<b>skipped question</b>			<b>62</b>



**19. What type of optimization do you perform? (Check all that apply)**

		Response Percent	Response Count
Stacking sequence		50.3%	148
Fiber orientation		61.2%	180
Overall weight of the structure		57.5%	169
<b>Stiffness</b>		<b>68.4%</b>	<b>201</b>
Strength		63.9%	188
Impact resistance		21.4%	63
Processing time		10.2%	30
Natural frequency		41.2%	121
Other (please specify)		6.8%	20
<b>answered question</b>			<b>294</b>
<b>skipped question</b>			<b>91</b>

**20. Do you account for variability of material property data in your analysis?**

		Response Percent	Response Count
Yes		63.6%	204
No		36.4%	117
<b>answered question</b>			<b>321</b>
<b>skipped question</b>			<b>64</b>



## 21. How important are the following to you and your organisation?

	Unimportant	Slightly important	Moderately important	Very important	Extremely important	Rating Average	Response Count
Micromechanical aspects (e.g. homogenisation and effects of inhomogeneity)	12.3% (36)	16.0% (47)	27.0% (79)	<b>29.0% (85)</b>	15.7% (46)	3.20	
Benchmark examples	4.7% (14)	11.8% (35)	31.1% (92)	<b>38.5% (114)</b>	13.9% (41)	3.45	
Cost analysis	7.0% (20)	18.2% (52)	<b>36.0% (103)</b>	28.3% (81)	10.5% (30)	3.17	
HPC (High Performance Computing)	5.8% (17)	17.7% (52)	29.6% (87)	<b>33.3% (98)</b>	13.6% (40)	3.31	
Advances in optimization	4.1% (12)	13.9% (41)	29.6% (87)	<b>36.1% (106)</b>	16.3% (48)	3.47	
						<b>answered question</b>	
						<b>skipped question</b>	



## 22. How important are advances in manufacturing simulation/process modelling to you?

	Unimportant	Slightly important	Moderately important	Very important	Extremely important	Rating Average	Response Count
Cure-cycle/cure kinetics	14.9% (42)	27.0% (76)	<b>30.6% (86)</b>	23.1% (65)	4.3% (12)	2.75	
Warpage	10.0% (28)	20.4% (57)	<b>31.4% (88)</b>	29.6% (83)	8.6% (24)	3.06	
Spring-in	14.0% (38)	21.0% (57)	<b>36.5% (99)</b>	22.9% (62)	5.5% (15)	2.85	
Drapage	16.0% (43)	17.5% (47)	<b>34.6% (93)</b>	23.8% (64)	8.2% (22)	2.91	
Forming/stamping	21.6% (57)	23.9% (63)	<b>31.4% (83)</b>	15.9% (42)	7.2% (19)	2.63	
RTM/VARTM	18.7% (49)	23.3% (61)	<b>32.1% (84)</b>	18.7% (49)	7.3% (19)	2.73	
<b>answered question</b>							
<b>skipped question</b>							

## 23. How important are advances in failure prediction to you?

	Unimportant	Slightly important	Moderately important	Very important	Extremely important	Rating Average	Response Count
Limits of failure prediction	0.7% (2)	2.3% (7)	13.3% (40)	<b>46.0% (138)</b>	37.7% (113)	4.18	
Guidelines for when theories are applicable	1.0% (3)	3.3% (10)	7.7% (23)	<b>47.3% (142)</b>	40.7% (122)	4.23	
The right properties for the right simulation	0.7% (2)	2.0% (6)	7.1% (21)	43.4% (129)	<b>46.8% (139)</b>	4.34	
<b>answered question</b>							
<b>skipped question</b>							



**24. Where do you need the most help when simulating composites?**

	Response Count
	119
answered question	119
skipped question	266

**25. Please provide your email address below if you wish to receive results of the survey.**

	Response Count
	252
answered question	252
skipped question	133

**26. Updates**

		Response Percent	Response Count
Please keep me updated on NAFEMS activities		100.0%	187
	answered question		187
	skipped question		198



**Page 2, Q1. Which best describes your business area?**

1	Inustrial equipemnt, automatisisation	Apr 4, 2012 7:13 AM
2	Industry R&D	Mar 26, 2012 8:35 AM
3	Automotive, Rubber and Plastics	Mar 23, 2012 8:04 AM
4	consulting	Mar 23, 2012 7:54 AM
5	Engineering Services	Mar 22, 2012 7:28 PM
6	polymer manufacturing	Mar 22, 2012 5:04 PM
7	Medical	Mar 22, 2012 5:02 PM
8	Composite Materials	Mar 22, 2012 4:57 PM
9	Materials consultant	Mar 22, 2012 4:07 PM
10	telecomm	Mar 22, 2012 2:32 PM
11	Defense	Mar 22, 2012 2:27 PM
12	Energy	Mar 22, 2012 1:00 PM
13	furniture fitting industrie	Mar 22, 2012 12:27 PM
14	Construction	Feb 21, 2012 2:47 PM
15	marine	Feb 20, 2012 2:06 PM
16	Shipbuilding	Feb 20, 2012 1:47 PM
17	off highway	Feb 19, 2012 10:17 PM
18	Consultant	Feb 19, 2012 5:24 PM
19	Consultant in Composites & simulation	Feb 19, 2012 4:31 PM
20	Civil engineering	Feb 18, 2012 11:47 AM
21	shipbuilding	Feb 18, 2012 9:21 AM
22	Mechanical machines Designing	Feb 18, 2012 2:50 AM
23	building contractors	Feb 18, 2012 1:38 AM
24	Consumer Goods	Feb 18, 2012 12:21 AM
25	Offshore Oil & Gas	Feb 17, 2012 11:48 PM
26	environmets, products, vehicles	Feb 17, 2012 10:51 PM
27	Defense	Feb 17, 2012 9:28 PM



**Page 2, Q1. Which best describes your business area?**

28	Marine energy	Feb 17, 2012 8:57 PM
29	Defense	Feb 17, 2012 7:41 PM
30	High Speed Amphibians (marine + automotive)	Feb 17, 2012 6:59 PM
31	Nuclear	Feb 17, 2012 6:29 PM
32	Energy solutions & supplier	Feb 14, 2012 10:30 PM
33	Composite consulting across all industrial sectors	Feb 14, 2012 7:36 PM
34	Government funding consulting to promote the use of composites within local industry	Feb 13, 2012 3:09 PM
35	Space	Feb 13, 2012 8:28 AM
36	Shipbuilding	Feb 13, 2012 7:17 AM
37	we consulting to more then one area	Feb 12, 2012 8:15 AM
38	engineering services	Feb 11, 2012 6:18 PM
39	Research Center	Feb 10, 2012 1:07 PM
40	Engineering Service Provider	Feb 10, 2012 7:57 AM
41	Textil	Feb 10, 2012 7:18 AM
42	Marine	Feb 9, 2012 3:43 PM
43	We develop composites software AND we use it for consulting work, primarily aerospace	Feb 9, 2012 2:57 PM
44	Midical	Feb 9, 2012 2:14 PM
45	Industrial / Defence / Medical	Feb 9, 2012 2:09 PM
46	Offshore, oil, gs	Feb 9, 2012 2:02 PM
47	Medical Devices	Feb 9, 2012 1:36 PM
48	Consultancy operating in numerous areas	Feb 9, 2012 12:39 PM
49	Government Specification & Procurement	Feb 9, 2012 12:18 PM
50	Defence - Marine	Feb 9, 2012 11:48 AM
51	Technical Consultancy	Feb 9, 2012 11:32 AM
52	plastics producer	Feb 8, 2012 1:23 PM
53	transportation	Feb 8, 2012 10:10 AM



**Page 2, Q1. Which best describes your business area?**

54	Defence	Feb 7, 2012 9:06 AM
55	marine	Feb 7, 2012 7:56 AM
56	energy	Feb 7, 2012 6:30 AM
57	Space	Feb 3, 2012 7:41 AM



**Page 2, Q2. What are the primary reasons your company uses composite materials instead of metals? (Check all that apply)**

1	Tailored electrical conductivity properties	Mar 30, 2012 6:04 AM
2	cost	Mar 27, 2012 10:34 AM
3	We do simulations for predicting behavior of composites	Mar 26, 2012 8:55 AM
4	Complex shapes, lower initial cost	Mar 23, 2012 1:51 PM
5	flexibility	Mar 23, 2012 8:04 AM
6	non conducting / insulation	Mar 23, 2012 6:44 AM
7	All mentioned reasons and much more	Mar 23, 2012 12:37 AM
8	Manufacturing considerations (reduced parts and assembly)	Mar 22, 2012 5:59 PM
9	Looks and Finish	Mar 22, 2012 5:34 PM
10	we sell composite materials	Mar 22, 2012 5:04 PM
11	Cost	Mar 22, 2012 5:02 PM
12	Functionality, style	Mar 22, 2012 5:02 PM
13	Costs	Mar 22, 2012 4:57 PM
14	We consult in this area - product approvals, standards,government affairs. We do not manufacture.	Mar 22, 2012 4:07 PM
15	multifunctional properties	Mar 22, 2012 3:35 PM
16	thermal stability	Mar 22, 2012 2:32 PM
17	Innovative Materials	Mar 22, 2012 2:31 PM
18	electrical insulation	Mar 22, 2012 1:00 PM
19	COST SAVING	Mar 22, 2012 11:46 AM
20	we are a producer	Mar 22, 2012 11:07 AM
21	radar transparency reducing assembly complexity	Mar 16, 2012 3:10 PM
22	research	Mar 6, 2012 7:40 PM
23	performance	Mar 6, 2012 7:38 PM
24	marketing	Feb 29, 2012 7:58 AM
25	Affordability of Large Structures for Prototyping and Low Rate Production	Feb 28, 2012 12:57 AM
26	impact (armor)	Feb 25, 2012 9:39 PM



**Page 2, Q2. What are the primary reasons your company uses composite materials instead of metals? (Check all that apply)**

27	Research projects	Feb 25, 2012 11:47 AM
28	Parts count reducing	Feb 24, 2012 3:09 PM
29	Fatigue Resistance	Feb 22, 2012 5:32 PM
30	research	Feb 21, 2012 6:07 PM
31	dimensional stability (low CTE and CME)	Feb 21, 2012 5:00 PM
32	multifunctionality (to save weight)	Feb 21, 2012 3:19 PM
33	Aesthetics	Feb 20, 2012 5:03 PM
34	Distortion stability under thermal environments.	Feb 20, 2012 4:43 PM
35	Both Weight saving & Strength	Feb 20, 2012 2:23 PM
36	Part consolidation, ease of manufacturing	Feb 20, 2012 1:39 PM
37	multifunctionality	Feb 20, 2012 10:01 AM
38	noise reduction	Feb 19, 2012 10:17 PM
39	New functionality	Feb 19, 2012 5:43 PM
40	research	Feb 18, 2012 9:35 PM
41	Research and Development	Feb 18, 2012 3:55 PM
42	based on above mentioned reasons and also situations of design parameters	Feb 18, 2012 2:50 AM
43	manufacturability	Feb 17, 2012 10:51 PM
44	Fatigue	Feb 17, 2012 10:20 PM
45	Composite structural properties can be tailored for the application.	Feb 17, 2012 10:04 PM
46	We are material suppliers	Feb 17, 2012 7:03 PM
47	printed wiring boards, not for primary structure	Feb 17, 2012 6:57 PM
48	Design of complex shapes;	Feb 16, 2012 10:04 PM
49	Contour requirements	Feb 15, 2012 6:38 PM
50	Reduced part count	Feb 15, 2012 5:00 PM
51	We do not use composite materials, but allow our customers to store all information about the composites they are interested in. Our customers are generally interested in all above	Feb 15, 2012 10:35 AM
52	damage tolerance	Feb 15, 2012 9:58 AM



**Page 2, Q2. What are the primary reasons your company uses composite materials instead of metals? (Check all that apply)**

53	Cost saving	Feb 15, 2012 9:18 AM
54	moldable shape	Feb 15, 2012 1:25 AM
55	electrical insulation	Feb 14, 2012 10:30 PM
56	For some cases ease of manufacture or reduced assembly steps for some parts and assemblies relative to metals.	Feb 14, 2012 7:36 PM
57	Design Freedom	Feb 14, 2012 7:29 PM
58	Interesting	Feb 14, 2012 3:02 PM
59	Cost	Feb 14, 2012 10:43 AM
60	Government funding mandates it.	Feb 13, 2012 3:09 PM
61	thermo-elastic, temperal stability	Feb 13, 2012 8:28 AM
62	1) easy production fast changes ~ no need of complicated jig ,riveting, ... 2) well fatigue properties	Feb 13, 2012 7:48 AM
63	Cost reduction	Feb 13, 2012 7:17 AM
64	Composites are the department's research topic.	Feb 13, 2012 6:25 AM
65	EMI transpirency	Feb 12, 2012 8:15 AM
66	Radiation Length (transparency), and radiation tolerance	Feb 9, 2012 5:00 PM
67	Reduce part counts	Feb 9, 2012 4:25 PM
68	Composites are Materials which are independently designable.	Feb 9, 2012 4:25 PM
69	Damping	Feb 9, 2012 3:43 PM
70	Stiffness and dimensional stability	Feb 9, 2012 2:57 PM
71	Allows use of foam core minimizing attenuation of treatment beam.	Feb 9, 2012 1:36 PM
72	We are not involved in production. Only simulation software.	Feb 9, 2012 1:34 PM
73	Consultancy, driven by customer requirements	Feb 9, 2012 12:39 PM
74	Developing software for Industry	Feb 9, 2012 11:38 AM
75	Are clients are typically not currently heavy users of composite materials - the answers that follow relate to recent projects involving composites	Feb 9, 2012 11:32 AM
76	not applicable	Feb 8, 2012 3:56 PM
77	Reduce MFG cost (time)	Feb 8, 2012 3:03 PM



**Page 2, Q2. What are the primary reasons your company uses composite materials instead of metals? (Check all that apply)**

78	subject of fundamental research	Feb 8, 2012 2:34 PM
79	Fatigue resistance	Feb 8, 2012 1:04 PM
80	assembly costs	Feb 8, 2012 10:10 AM
81	Multifunctional structures	Feb 7, 2012 11:38 AM
82	designable material properties damping	Feb 7, 2012 9:56 AM
83	good performance with respect to mechanical and environmental threats (impact, fire)	Feb 7, 2012 8:46 AM
84	as university, we do research in both fields	Feb 7, 2012 8:14 AM
85	we are a classification society and our clients use composites mainly for weight saving	Feb 7, 2012 7:56 AM
86	Fatigue	Feb 7, 2012 7:49 AM



**Page 2, Q3. Which kind of composites do you use? (Check all that apply)**

1	braids	Mar 27, 2012 5:55 PM
2	rubber-fabric compositr	Mar 23, 2012 8:22 AM
3	steel cords	Mar 23, 2012 8:04 AM
4	Metal Matrix Composites	Mar 22, 2012 7:28 PM
5	RTM	Mar 22, 2012 5:29 PM
6	We recommend and specify. We do not manufacture	Mar 22, 2012 4:07 PM
7	FRP rods	Feb 21, 2012 2:47 PM
8	all of the above	Feb 20, 2012 2:06 PM
9	we use FEA to simulate the composites required by our clients	Feb 19, 2012 11:58 AM
10	nanosilica	Feb 19, 2012 10:22 AM
11	Glass fiber reinforced concrete (GRC)	Feb 18, 2012 9:35 PM
12	bimetal	Feb 18, 2012 5:47 PM
13	Carbon fiber	Feb 18, 2012 11:47 AM
14	.....	Feb 18, 2012 2:50 AM
15	concrete and steel	Feb 18, 2012 1:38 AM
16	wet lay fiberglass and carbon	Feb 17, 2012 10:01 PM
17	preforms	Feb 17, 2012 8:57 PM
18	PWB	Feb 17, 2012 6:57 PM
19	I am not sure.	Feb 17, 2012 6:29 PM
20	RTM with preform	Feb 16, 2012 10:04 PM
21	sandwich	Feb 15, 2012 1:25 AM
22	Sandwich Panels	Feb 14, 2012 7:31 PM
23	BMC	Feb 14, 2012 10:43 AM
24	Natrual fibre/resin	Feb 13, 2012 3:09 PM
25	MMC	Feb 13, 2012 8:28 AM
26	Thermoplastic Composites Thermoplastic Hybrid materials	Feb 9, 2012 4:25 PM
27	ceramic composites; carbon-carbon	Feb 9, 2012 2:53 PM



**Page 2, Q3. Which kind of composites do you use? (Check all that apply)**

28	Carbon composite/foam sandwich beam	Feb 9, 2012 2:14 PM
29	None	Feb 9, 2012 1:34 PM
30	Consultancy driven by customer requirements	Feb 9, 2012 12:39 PM
31	not applicable	Feb 8, 2012 3:56 PM
32	sandwich	Feb 8, 2012 10:10 AM
33	CNT reinforced composites	Feb 7, 2012 9:06 AM
34	Nanocomposites	Feb 6, 2012 2:03 PM



**Page 2, Q4. What type of fiber material do you use? (Check all that apply)**

1	Basalt	Mar 26, 2012 2:28 PM
2	Polyamid	Mar 23, 2012 8:04 AM
3	We recommend and specify. We do not manufacture	Mar 22, 2012 4:07 PM
4	plastics	Mar 22, 2012 2:32 PM
5	Spectra	Feb 25, 2012 9:39 PM
6	all of the above	Feb 20, 2012 2:06 PM
7	see above	Feb 19, 2012 11:58 AM
8	concrete and steel	Feb 18, 2012 1:38 AM
9	SiC	Feb 13, 2012 8:28 AM
10	foam	Feb 9, 2012 2:14 PM
11	None	Feb 9, 2012 1:34 PM
12	Kevlar	Feb 9, 2012 1:18 PM
13	Consultancy driven by customer requirements	Feb 9, 2012 12:39 PM
14	not applicable	Feb 8, 2012 3:56 PM
15	Boron	Feb 8, 2012 3:23 PM
16	Basalt	Feb 7, 2012 9:56 AM



**Page 2, Q5. What type of matrix material do you use? (Check all that apply)**

1	Rubber	Mar 23, 2012 8:04 AM
2	We recommend and specify. We do not manufacture	Mar 22, 2012 4:07 PM
3	Concrete	Feb 21, 2012 2:47 PM
4	Rubber	Feb 20, 2012 9:53 AM
5	see above	Feb 19, 2012 11:58 AM
6	Concrete	Feb 18, 2012 9:35 PM
7	Urethane Foam	Feb 17, 2012 10:09 PM
8	Phenolic and Epoxy resin	Feb 14, 2012 7:31 PM
9	Epoxy Resin	Feb 10, 2012 5:03 PM
10	None	Feb 9, 2012 1:34 PM
11	Consultancy driven by customer requirements	Feb 9, 2012 12:39 PM
12	not applicable	Feb 8, 2012 3:56 PM



**Page 2, Q6. Which manufacturing process do you typically use? (Check all that apply)**

1	RTM	Mar 27, 2012 5:55 PM
2	press curing at high temperature	Mar 23, 2012 8:22 AM
3	rolling, braiding	Mar 23, 2012 8:04 AM
4	Press	Mar 22, 2012 9:23 PM
5	Squeeze casting (MMC's)	Mar 22, 2012 7:28 PM
6	RTM, thermoplastic forming	Mar 22, 2012 5:59 PM
7	Compression Molding	Mar 22, 2012 5:04 PM
8	Thermoforming	Mar 22, 2012 4:39 PM
9	We recommend and specify. We do not manufacture	Mar 22, 2012 4:07 PM
10	Reaction injection molding - RIM	Mar 22, 2012 3:33 PM
11	N/A	Mar 22, 2012 2:27 PM
12	Compression molding of DLFT	Mar 22, 2012 11:40 AM
13	Out of Autoclave oven cure with bagging	Mar 6, 2012 2:08 AM
14	SMC	Feb 28, 2012 3:59 PM
15	Out-of-autoclave Prepreg	Feb 28, 2012 12:57 AM
16	SQRTM	Feb 25, 2012 9:39 PM
17	ATL - Automated Tape Laying	Feb 19, 2012 4:31 PM
18	see above	Feb 19, 2012 11:58 AM
19	Injection Molding	Feb 17, 2012 10:20 PM
20	Lamination with thermoforming	Feb 17, 2012 10:09 PM
21	vacuum pressure in an oven cure	Feb 17, 2012 10:01 PM
22	Table rolling, bladder molding	Feb 17, 2012 9:30 PM
23	hot press	Feb 17, 2012 9:17 PM
24	Vacuum Bag/Oven Cure	Feb 16, 2012 12:49 PM
25	We do not manufacture	Feb 15, 2012 5:00 PM
26	Out of Autoclave	Feb 15, 2012 1:56 AM
27	out-of-autoclave	Feb 15, 2012 1:25 AM



**Page 2, Q6. Which manufacturing process do you typically use? (Check all that apply)**

28	Compression Mold	Feb 14, 2012 7:29 PM
29	VIP	Feb 14, 2012 3:02 PM
30	Thermo forming	Feb 14, 2012 2:53 PM
31	RTM, LRTM, CCBM	Feb 13, 2012 3:09 PM
32	CVD , CVI	Feb 13, 2012 1:15 PM
33	Infusion	Feb 13, 2012 7:17 AM
34	VAP, High Pressure RTM	Feb 9, 2012 4:25 PM
35	pyrolysis	Feb 9, 2012 2:53 PM
36	Injection, Infusion, Filament Winding, Oven Curing	Feb 9, 2012 2:09 PM
37	None	Feb 9, 2012 1:34 PM
38	Consultancy driven by customer requirements	Feb 9, 2012 12:39 PM
39	all in a research environment	Feb 8, 2012 3:56 PM
40	None - theoretical research	Feb 8, 2012 2:34 PM
41	vacuum assisted hot press	Feb 8, 2012 2:23 PM
42	Thermoforming Winding	Feb 7, 2012 9:56 AM



**Page 2, Q7. Which are the most important performance indicators? (Check all that apply)**

1	flexibility	Mar 23, 2012 8:04 AM
2	crashworthiness, energy absorption	Mar 22, 2012 5:02 PM
3	acoustic	Mar 22, 2012 4:57 PM
4	Fracture	Mar 22, 2012 4:57 PM
5	cost	Mar 22, 2012 1:31 PM
6	creep	Mar 22, 2012 12:27 PM
7	damage resistance and damage tolerance	Feb 29, 2012 10:03 PM
8	Depends upon the physics of the specific structure using the composite. Aircraft - fatigue with regard to strength and failure but still want wt savings. spacecraft-stiffness, weight, failure&strength in about that order.	Feb 25, 2012 9:39 PM
9	impact performance	Feb 19, 2012 11:58 AM
10	Impact energy absorption	Feb 19, 2012 4:53 AM
11	combined stresses, e.g. Puck	Feb 17, 2012 10:20 PM
12	Shielding	Feb 17, 2012 6:29 PM
13	Onset of non-benign damage Corrosion resistance	Feb 15, 2012 5:00 PM
14	damage resistance and tolerance, environmental tolerance (exposure to elevated and low temperatures and fluids)	Feb 15, 2012 12:06 PM
15	Defects, Delamination	Feb 15, 2012 9:58 AM
16	Fire performance	Feb 15, 2012 9:18 AM
17	shape stability	Feb 15, 2012 1:25 AM
18	fireproof	Feb 14, 2012 10:30 PM
19	others in different application and in general you balance all of them	Feb 12, 2012 8:15 AM
20	Cost	Feb 10, 2012 12:20 PM
21	Surface Quality	Feb 9, 2012 3:34 PM
22	high temperature	Feb 9, 2012 2:53 PM
23	dimensional stability	Feb 9, 2012 2:29 PM
24	Damage Tolerance. ETW properties	Feb 9, 2012 2:11 PM
25	N/A	Feb 9, 2012 1:34 PM
26	strain	Feb 9, 2012 1:18 PM



**Page 2, Q7. Which are the most important performance indicators? (Check all that apply)**

27	no applicable	Feb 8, 2012 3:56 PM
28	cost	Feb 8, 2012 3:30 PM
29	all	Feb 8, 2012 2:34 PM
30	damage tolerance	Feb 8, 2012 12:50 PM
31	production cost	Feb 8, 2012 10:10 AM



**Page 2, Q8. How important is it to you to control the following?**

1	percentage of elongation	Mar 23, 2012 8:11 AM
2	Delamination, matrix crack, voids,	Mar 22, 2012 9:23 PM
3	Thermal deformation	Mar 22, 2012 6:24 PM
4	Wetability, voids, final thickness, final shape, final mechanical properties	Mar 22, 2012 5:02 PM
5	discontinuous fiber orientation	Mar 22, 2012 4:39 PM
6	We recommend and specify. We do not manufacture	Mar 22, 2012 4:07 PM
7	Resin flow in fabric or preform	Mar 22, 2012 3:33 PM
8	Thickness	Feb 29, 2012 5:22 PM
9	Fiber Volume and Void Content	Feb 28, 2012 12:57 AM
10	dimensional control	Feb 21, 2012 3:19 PM
11	placement and bond	Feb 21, 2012 2:47 PM
12	Manufacturing consistency	Feb 20, 2012 4:43 PM
13	Tg	Feb 20, 2012 2:59 PM
14	knit lines	Feb 20, 2012 1:39 PM
15	Voids, Delamination; anything that deteriorates the overall performance	Feb 19, 2012 4:31 PM
16	uniformity	Feb 18, 2012 9:35 PM
17	Fiber/Resin content	Feb 16, 2012 10:04 PM
18	Level of Porosity	Feb 15, 2012 1:56 AM
19	wrinkles	Feb 15, 2012 1:25 AM
20	FOD control, inspection techniques	Feb 10, 2012 10:27 PM
21	Consolidation	Feb 9, 2012 4:25 PM
22	porosity, density	Feb 9, 2012 2:53 PM
23	N/A	Feb 9, 2012 1:34 PM
24	Voids in the matrix	Feb 9, 2012 11:48 AM
25	Coefficient of thermal expansion	Feb 3, 2012 7:41 AM



**Page 3, Q9. What finite element software do you use for analyses? (Check all that apply)**

1	Hyperworks	Mar 28, 2012 3:20 PM
2	ISAMI	Mar 27, 2012 6:00 PM
3	In-house code	Mar 27, 2012 9:27 AM
4	Radioss, PAM Crash	Mar 23, 2012 8:13 AM
5	CAE Linux, OpenFOAM	Mar 23, 2012 12:43 AM
6	RADIOSS/Optistruct	Mar 22, 2012 7:31 PM
7	cosmosm	Mar 22, 2012 6:02 PM
8	Optistruct	Mar 22, 2012 5:37 PM
9	optistruct	Mar 22, 2012 4:57 PM
10	Autodesk Simulation	Mar 22, 2012 4:43 PM
11	We do not do FEA	Mar 22, 2012 4:09 PM
12	code aster	Mar 22, 2012 3:24 PM
13	Creo Simulate	Mar 22, 2012 12:11 PM
14	Digimat for material modeling	Mar 22, 2012 11:42 AM
15	radioss	Mar 22, 2012 11:10 AM
16	HyperSizer	Mar 13, 2012 8:42 PM
17	COSMO-M	Mar 3, 2012 11:12 PM
18	NEiNastran	Feb 22, 2012 12:59 PM
19	PAM-CRASH	Feb 22, 2012 10:51 AM
20	RADIOSS	Feb 22, 2012 10:04 AM
21	AdSec	Feb 21, 2012 2:49 PM
22	Permas	Feb 20, 2012 1:43 PM
23	HyperWorks	Feb 20, 2012 8:36 AM
24	none currently	Feb 19, 2012 10:20 PM
25	ALGOR	Feb 19, 2012 5:26 PM
26	HyperWorks	Feb 19, 2012 4:59 AM
27	Auto Form	Feb 18, 2012 5:50 PM



**Page 3, Q9. What finite element software do you use for analyses? (Check all that apply)**

28	ESAComp	Feb 18, 2012 9:24 AM
29	cosmos, cosmol and Solidworks simulations	Feb 18, 2012 2:57 AM
30	RADIOSS, OPTISTRUCT	Feb 18, 2012 12:26 AM
31	Comsol, Code_Aster	Feb 17, 2012 10:22 PM
32	Catia Analysis	Feb 17, 2012 10:04 PM
33	NEi Nastran	Feb 17, 2012 9:32 PM
34	Extreme Loading for Structures	Feb 17, 2012 8:22 PM
35	CAESAR II	Feb 17, 2012 6:31 PM
36	In-house developed simulation tools Customer furnished analysis tools	Feb 16, 2012 12:54 PM
37	ESAComp	Feb 15, 2012 11:47 AM
38	In-house code	Feb 15, 2012 9:21 AM
39	NX	Feb 15, 2012 1:29 AM
40	Radioss	Feb 14, 2012 7:31 PM
41	NISA	Feb 14, 2012 1:32 PM
42	ESAComp	Feb 14, 2012 12:11 PM
43	ESAComp	Feb 14, 2012 10:39 AM
44	Radioss / PAM-Crash	Feb 13, 2012 12:54 PM
45	Algor	Feb 13, 2012 7:19 AM
46	hyper works	Feb 12, 2012 8:21 AM
47	Solidworks Simulation, Mechanica	Feb 9, 2012 5:05 PM
48	CATIA V5 ELFINI	Feb 9, 2012 4:33 PM
49	Radioss	Feb 9, 2012 3:48 PM
50	ESAComp	Feb 9, 2012 2:33 PM
51	None	Feb 9, 2012 2:19 PM
52	Firehole - Helius MCT	Feb 8, 2012 3:34 PM
53	STAGS	Feb 8, 2012 2:27 PM
54	RADIOSS	Feb 7, 2012 3:49 PM



**Page 3, Q9. What finite element software do you use for analyses? (Check all that apply)**

55	hyermesh	Feb 7, 2012 3:39 PM
56	SolidWorks Simulation	Feb 7, 2012 2:16 PM
57	Optistruct, Radioss	Feb 7, 2012 9:58 AM
58	SolidWorks Simulation	Feb 7, 2012 9:08 AM
59	MSC Dytran	Feb 7, 2012 8:49 AM
60	ANSYS Composite PrepPost	Feb 7, 2012 7:51 AM
61	PAMCRASH Optistruct	Feb 7, 2012 6:39 AM
62	PERMAS	Feb 7, 2012 5:59 AM
63	pamcrash	Feb 6, 2012 8:19 PM
64	Altair HyperWorks Radioss	Feb 5, 2012 4:53 PM
65	My own FE code	Feb 2, 2012 4:16 PM
66	NEi Nastran	Feb 2, 2012 7:58 AM
67	NEi Nastran	Jan 27, 2012 11:14 PM



**Page 3, Q10. What pre-processors do you use to create the models? (Check all that apply)**

1	MSC Mentat	Apr 10, 2012 6:03 PM
2	ANSA	Apr 6, 2012 9:05 AM
3	Ansys Mechanical	Mar 30, 2012 6:05 AM
4	COMSOL	Mar 28, 2012 7:40 PM
5	SAMCEF	Mar 27, 2012 11:23 AM
6	In-house code	Mar 27, 2012 9:27 AM
7	ANSA	Mar 26, 2012 2:30 PM
8	Digmat 4.2	Mar 26, 2012 8:57 AM
9	Hypermesh, Ansa	Mar 23, 2012 8:28 AM
10	CAE Linux	Mar 23, 2012 12:43 AM
11	ANSYS Classic	Mar 22, 2012 6:27 PM
12	geostar	Mar 22, 2012 6:02 PM
13	NX Advanced Sim	Mar 22, 2012 6:02 PM
14	ANSA	Mar 22, 2012 5:05 PM
15	Autodesk Simulation	Mar 22, 2012 4:43 PM
16	We do not do FEA	Mar 22, 2012 4:09 PM
17	in-house software	Mar 22, 2012 3:26 PM
18	salome meca	Mar 22, 2012 3:24 PM
19	dont know	Mar 22, 2012 2:35 PM
20	ANSA	Mar 22, 2012 2:34 PM
21	Samcef Field	Mar 22, 2012 1:21 PM
22	MSC MENTAT MSC SIMXPRT	Mar 22, 2012 12:41 PM
23	Ansys COMposites PrepPost	Mar 22, 2012 10:41 AM
24	Parametric scripting, Python	Mar 9, 2012 7:35 PM
25	Ansa	Feb 29, 2012 1:37 PM
26	In-house	Feb 29, 2012 8:02 AM
27	Ansa	Feb 28, 2012 4:18 PM



**Page 3, Q10. What pre-processors do you use to create the models? (Check all that apply)**

28	ANSA	Feb 22, 2012 10:51 AM
29	GSA	Feb 21, 2012 2:49 PM
30	Mentat	Feb 20, 2012 3:03 PM
31	T-Systems Medina	Feb 20, 2012 1:43 PM
32	ANSA	Feb 20, 2012 10:04 AM
33	none currently	Feb 19, 2012 10:20 PM
34	SOLID EDGE	Feb 19, 2012 5:26 PM
35	MSC.Mentat	Feb 19, 2012 4:37 PM
36	ETA PreSys	Feb 19, 2012 12:28 PM
37	SimExpert	Feb 19, 2012 6:43 AM
38	ACP	Feb 18, 2012 9:24 AM
39	nx cae	Feb 18, 2012 9:02 AM
40	Mentat	Feb 18, 2012 8:46 AM
41	Solidworks, Pro E & Auto Cad	Feb 18, 2012 2:57 AM
42	ANSA, Ansys Classic	Feb 17, 2012 10:22 PM
43	Catia Aanalysis	Feb 17, 2012 10:04 PM
44	LS-PrePost, Text Editors	Feb 17, 2012 9:31 PM
45	FRANC3D, SolidWorks	Feb 17, 2012 9:19 PM
46	Real ANSYS	Feb 17, 2012 8:46 PM
47	Extreme Loading for Structures	Feb 17, 2012 8:22 PM
48	CATIA	Feb 17, 2012 7:35 PM
49	NX	Feb 15, 2012 1:29 AM
50	composite pre	Feb 14, 2012 9:27 PM
51	NX Advanced Simulation	Feb 14, 2012 7:38 PM
52	ANSYS APDL	Feb 14, 2012 3:06 PM
53	LS-PrePost	Feb 14, 2012 2:55 PM
54	NISA	Feb 14, 2012 1:32 PM



**Page 3, Q10. What pre-processors do you use to create the models? (Check all that apply)**

55	NX	Feb 13, 2012 3:11 PM
56	ANSA	Feb 13, 2012 2:58 PM
57	SAMCEF Field	Feb 13, 2012 12:51 PM
58	Laminate Tools	Feb 10, 2012 1:03 PM
59	ACPPre	Feb 10, 2012 7:20 AM
60	Ansys Composites Pre/Post	Feb 9, 2012 5:05 PM
61	CATIA V5	Feb 9, 2012 4:33 PM
62	NX	Feb 9, 2012 4:28 PM
63	We also use NX Advanced Simulation and NX Laminate Composites...perhaps these should be added to your list.	Feb 9, 2012 3:01 PM
64	Solidworks	Feb 9, 2012 2:19 PM
65	SimXpert	Feb 9, 2012 11:41 AM
66	SolidWorks	Feb 8, 2012 7:34 PM
67	LS-DYNA Pre-Post	Feb 8, 2012 2:27 PM
68	ANSA, LS-PrePost	Feb 8, 2012 9:57 AM
69	ANSYS Composites PrepPost SolidWorks Simulation	Feb 7, 2012 2:16 PM
70	SolidWorks simulation	Feb 7, 2012 9:08 AM
71	MSC Mentat	Feb 7, 2012 8:49 AM
72	self developed scripts/programs	Feb 7, 2012 8:19 AM
73	Samcef field	Feb 7, 2012 7:46 AM
74	CATIA modules	Feb 7, 2012 7:31 AM
75	ANSA	Feb 7, 2012 6:39 AM
76	MEDINA	Feb 7, 2012 5:59 AM
77	Nastran FX	Feb 5, 2012 4:06 PM
78	own specimen specific FORTRAN code that outputs FE input file	Jan 31, 2012 8:29 PM



**Page 3, Q11. What process simulation tool do you use for injection molding?**

1	I really don't know.....	Mar 23, 2012 9:54 AM
2	OpenFOAM	Mar 23, 2012 12:43 AM
3	pamform	Mar 22, 2012 8:13 PM
4	none	Mar 22, 2012 5:06 PM
5	None	Mar 22, 2012 4:59 PM
6	internal software	Mar 22, 2012 1:06 PM
7	3D Timon	Mar 22, 2012 12:12 PM
8	My clients have their own software	Feb 25, 2012 9:44 PM
9	None	Feb 22, 2012 12:59 PM
10	None	Feb 20, 2012 4:46 PM
11	Mentat	Feb 20, 2012 3:03 PM
12	not applicable	Feb 20, 2012 2:08 PM
13	none currently	Feb 19, 2012 10:20 PM
14	MSC.MARC for curing kinetics, residual stress	Feb 19, 2012 4:37 PM
15	NA	Feb 19, 2012 9:48 AM
16	NA	Feb 19, 2012 6:43 AM
17	None	Feb 18, 2012 3:58 PM
18	unknown, this is a new job for me and I haven't found this information yet.	Feb 18, 2012 12:34 PM
19	None	Feb 18, 2012 8:46 AM
20	N/A	Feb 18, 2012 12:26 AM
21	Unknown	Feb 17, 2012 8:22 PM
22	I don't use injection molding process	Feb 17, 2012 7:34 PM
23	none	Feb 17, 2012 7:03 PM
24	Cooperation with experts and with Universities	Feb 16, 2012 10:11 PM
25	None	Feb 15, 2012 5:10 PM
26	None	Feb 15, 2012 11:40 AM
27	Fiber SIM	Feb 14, 2012 8:36 PM



**Page 3, Q11. What process simulation tool do you use for injection molding?**

28	RTM_Vorx	Feb 14, 2012 12:11 PM
29	n/a	Feb 13, 2012 3:11 PM
30	No software	Feb 13, 2012 8:59 AM
31	Currently, none.	Feb 13, 2012 6:28 AM
32	N/A	Feb 13, 2012 12:38 AM
33	we get it from customer	Feb 12, 2012 8:21 AM
34	none	Feb 10, 2012 12:43 PM
35	None	Feb 9, 2012 2:19 PM
36	none	Feb 9, 2012 2:04 PM
37	None	Feb 9, 2012 1:37 PM
38	None	Feb 9, 2012 11:53 AM
39	not applicable	Feb 8, 2012 3:59 PM
40	None	Feb 8, 2012 3:05 PM
41	none	Feb 8, 2012 9:57 AM
42	none	Feb 7, 2012 7:59 AM
43	PAM-RTM	Feb 7, 2012 6:39 AM
44	None	Feb 6, 2012 2:06 PM



**Page 3, Q12. What process simulation do you use for compression molding?**

1	I really don't know.....	Mar 23, 2012 9:54 AM
2	None	Mar 23, 2012 1:13 AM
3	own	Mar 23, 2012 12:43 AM
4	none	Mar 22, 2012 5:06 PM
5	N/A	Mar 22, 2012 4:43 PM
6	None	Mar 22, 2012 4:26 PM
7	We dont	Mar 22, 2012 4:09 PM
8	dont know	Mar 22, 2012 2:35 PM
9	internal software	Mar 22, 2012 1:06 PM
10	Moldex3D	Mar 22, 2012 12:11 PM
11	NA ... I support clients in their mfg. process	Feb 25, 2012 9:44 PM
12	None	Feb 22, 2012 12:59 PM
13	None	Feb 20, 2012 4:46 PM
14	Mentat	Feb 20, 2012 3:03 PM
15	not applicable	Feb 20, 2012 2:08 PM
16	none currently	Feb 19, 2012 10:20 PM
17	MSC.MARC for curing kinetics, residual stress	Feb 19, 2012 4:37 PM
18	have tried LS-DYNA	Feb 19, 2012 12:28 PM
19	NA	Feb 19, 2012 9:48 AM
20	NA	Feb 19, 2012 6:43 AM
21	none	Feb 19, 2012 4:59 AM
22	None	Feb 18, 2012 3:58 PM
23	unknown	Feb 18, 2012 12:34 PM
24	None	Feb 18, 2012 8:46 AM
25	N/A	Feb 18, 2012 12:26 AM
26	None	Feb 17, 2012 10:13 PM
27	Unknown	Feb 17, 2012 8:22 PM



**Page 3, Q12. What process simulation do you use for compression molding?**

28	Don't Know	Feb 17, 2012 7:45 PM
29	I don't use compression molding process	Feb 17, 2012 7:34 PM
30	none	Feb 17, 2012 7:03 PM
31	None	Feb 15, 2012 5:10 PM
32	none	Feb 15, 2012 11:40 AM
33	don't use	Feb 14, 2012 8:36 PM
34	n/a	Feb 13, 2012 3:11 PM
35	No software	Feb 13, 2012 8:59 AM
36	Currently, none.	Feb 13, 2012 6:28 AM
37	N/A	Feb 13, 2012 12:38 AM
38	nome	Feb 10, 2012 12:43 PM
39	own	Feb 10, 2012 8:01 AM
40	none	Feb 9, 2012 2:30 PM
41	None	Feb 9, 2012 2:19 PM
42	none	Feb 9, 2012 2:04 PM
43	None	Feb 9, 2012 1:37 PM
44	None	Feb 9, 2012 11:53 AM
45	not applicable	Feb 8, 2012 3:59 PM
46	None	Feb 8, 2012 3:05 PM
47	In-House code	Feb 8, 2012 3:00 PM
48	none	Feb 8, 2012 9:57 AM
49	none	Feb 7, 2012 7:59 AM
50	None	Feb 6, 2012 2:06 PM



**Page 3, Q13. What process simulation do you use for RTM?**

1	RTM-Worx	Mar 26, 2012 8:38 AM
2	I really don't know.....	Mar 23, 2012 9:54 AM
3	None	Mar 23, 2012 1:13 AM
4	own	Mar 23, 2012 12:43 AM
5	none	Mar 22, 2012 5:06 PM
6	N/A	Mar 22, 2012 4:43 PM
7	None	Mar 22, 2012 4:26 PM
8	We dont	Mar 22, 2012 4:09 PM
9	dont know	Mar 22, 2012 2:35 PM
10	NA ... I support clients in their mfg. process	Feb 25, 2012 9:44 PM
11	RTM-Worx	Feb 22, 2012 12:59 PM
12	Mentat	Feb 20, 2012 3:03 PM
13	not applicable	Feb 20, 2012 2:08 PM
14	none currently	Feb 19, 2012 10:20 PM
15	n/a	Feb 19, 2012 12:28 PM
16	NA	Feb 19, 2012 9:48 AM
17	NA	Feb 19, 2012 6:43 AM
18	none	Feb 19, 2012 4:59 AM
19	None	Feb 18, 2012 3:58 PM
20	unknown	Feb 18, 2012 12:34 PM
21	None	Feb 18, 2012 8:46 AM
22	N/A	Feb 18, 2012 12:26 AM
23	None	Feb 17, 2012 10:13 PM
24	Unknown	Feb 17, 2012 8:22 PM
25	Don't Know	Feb 17, 2012 7:45 PM
26	I don't use RTM process	Feb 17, 2012 7:34 PM
27	bibe	Feb 17, 2012 7:03 PM



**Page 3, Q13. What process simulation do you use for RTM?**

28	Cooperation with experts and with Universities	Feb 16, 2012 10:11 PM
29	None	Feb 15, 2012 5:10 PM
30	none	Feb 15, 2012 11:40 AM
31	N/A	Feb 14, 2012 8:36 PM
32	RTM-Vorx	Feb 14, 2012 12:11 PM
33	n/a	Feb 13, 2012 3:11 PM
34	Currently, none.	Feb 13, 2012 6:28 AM
35	N/A	Feb 13, 2012 12:38 AM
36	own	Feb 10, 2012 8:01 AM
37	none	Feb 9, 2012 2:30 PM
38	None	Feb 9, 2012 2:19 PM
39	none	Feb 9, 2012 2:04 PM
40	None	Feb 9, 2012 1:37 PM
41	None	Feb 9, 2012 11:53 AM
42	None	Feb 8, 2012 3:05 PM
43	none	Feb 8, 2012 9:57 AM
44	Polyworks	Feb 7, 2012 11:42 AM
45	none	Feb 7, 2012 7:59 AM
46	Samcef mecano	Feb 7, 2012 7:46 AM
47	none	Feb 6, 2012 2:06 PM



**Page 3, Q14. What process simulation do you use for draping?**

1	MSC Patran Laminate Modeler	Apr 10, 2012 6:03 PM
2	compositlink	Mar 27, 2012 6:00 PM
3	SAMCEF	Mar 27, 2012 11:23 AM
4	None	Mar 23, 2012 1:13 AM
5	NX Laminate Composites add-on - very similar to Simulayt	Mar 22, 2012 6:02 PM
6	ANSYS ACP	Mar 22, 2012 5:27 PM
7	none	Mar 22, 2012 5:06 PM
8	purchase of one of the above is planned	Mar 22, 2012 4:45 PM
9	N/A	Mar 22, 2012 4:43 PM
10	None	Mar 22, 2012 4:26 PM
11	We dont	Mar 22, 2012 4:09 PM
12	own code	Mar 22, 2012 3:26 PM
13	dont know	Mar 22, 2012 2:35 PM
14	Ansys COMposites PrepPost	Mar 22, 2012 10:41 AM
15	Ansys ACP	Feb 28, 2012 7:38 AM
16	NA ... I support clients in their mfg. process	Feb 25, 2012 9:44 PM
17	PAM-FORM	Feb 24, 2012 9:53 AM
18	None	Feb 22, 2012 12:59 PM
19	None	Feb 20, 2012 4:46 PM
20	Mentat	Feb 20, 2012 3:03 PM
21	not applicable	Feb 20, 2012 2:08 PM
22	Coriolis CATFiber / ACE V2	Feb 20, 2012 8:42 AM
23	none currently	Feb 19, 2012 10:20 PM
24	Patran Laminate-Modeler	Feb 19, 2012 4:37 PM
25	NA	Feb 19, 2012 6:43 AM
26	none	Feb 19, 2012 4:59 AM
27	None	Feb 18, 2012 3:58 PM



**Page 3, Q14. What process simulation do you use for draping?**

28	unknown	Feb 18, 2012 12:34 PM
29	Hypermesh	Feb 18, 2012 12:26 AM
30	None	Feb 17, 2012 10:13 PM
31	Excell	Feb 17, 2012 8:46 PM
32	Unknown	Feb 17, 2012 8:22 PM
33	Don't Know	Feb 17, 2012 7:45 PM
34	bibe	Feb 17, 2012 7:03 PM
35	None	Feb 15, 2012 5:10 PM
36	Laminate Modeler	Feb 15, 2012 10:12 AM
37	NX	Feb 13, 2012 3:11 PM
38	Pam RTM Quikform	Feb 13, 2012 11:58 AM
39	I am not aware of.	Feb 13, 2012 8:59 AM
40	ANSYS ACP	Feb 13, 2012 6:28 AM
41	N/A	Feb 13, 2012 12:38 AM
42	ANSYS PrePost	Feb 10, 2012 8:01 AM
43	NX	Feb 9, 2012 4:28 PM
44	NX Laminate Composites.	Feb 9, 2012 3:01 PM
45	ACP	Feb 9, 2012 2:30 PM
46	None	Feb 9, 2012 2:19 PM
47	none	Feb 9, 2012 2:04 PM
48	ANSYS Composite PrepPost	Feb 9, 2012 1:37 PM
49	None	Feb 9, 2012 11:53 AM
50	Patran/Laminate Modeler	Feb 9, 2012 11:41 AM
51	not applicable	Feb 8, 2012 3:59 PM
52	None	Feb 8, 2012 3:05 PM
53	none	Feb 8, 2012 9:57 AM
54	ANSYS Composites PrepPost	Feb 7, 2012 2:16 PM



**Page 3, Q14. What process simulation do you use for draping?**

55	none	Feb 7, 2012 7:59 AM
56	Samcef	Feb 7, 2012 7:46 AM
57	PAM-FORM	Feb 7, 2012 6:39 AM
58	pam-Form	Feb 6, 2012 8:19 PM
59	None	Feb 6, 2012 2:06 PM
60	MSC Patran Laminate Modeler	Jan 30, 2012 8:57 PM



**Page 3, Q15. What post-processors do you use to post-process your data? (Check all that apply)**

1	MSC Mentat	Apr 10, 2012 6:03 PM
2	LS-PREPOST	Mar 30, 2012 6:17 PM
3	Laminate modeler	Mar 27, 2012 6:00 PM
4	SAMCEF	Mar 27, 2012 11:23 AM
5	In-house code	Mar 27, 2012 9:27 AM
6	FEMFAT, nCode	Mar 26, 2012 2:07 PM
7	ANSYS	Mar 26, 2012 6:29 AM
8	Animator	Mar 23, 2012 8:28 AM
9	ANSYS Workbench	Mar 23, 2012 7:34 AM
10	CAELinux	Mar 23, 2012 12:43 AM
11	ANSYS	Mar 22, 2012 9:25 PM
12	ANSYS Workbench	Mar 22, 2012 7:31 PM
13	ANSYS Classic	Mar 22, 2012 6:27 PM
14	NX Advanded Sim	Mar 22, 2012 6:02 PM
15	LS-Prepost	Mar 22, 2012 5:37 PM
16	ANSYS ACP	Mar 22, 2012 5:27 PM
17	METAPOST	Mar 22, 2012 5:05 PM
18	Autodesk	Mar 22, 2012 4:43 PM
19	We dont	Mar 22, 2012 4:09 PM
20	salome meca	Mar 22, 2012 3:24 PM
21	Samcef Field	Mar 22, 2012 1:21 PM
22	MSC MENTAT ANSYS WB MSC SIMXPRT	Mar 22, 2012 12:41 PM
23	Dyna post	Mar 22, 2012 11:42 AM
24	Ansys COposites PrepPost	Mar 22, 2012 10:41 AM
25	TMP's Slim/Vision	Mar 6, 2012 2:10 AM
26	In-house	Feb 29, 2012 8:02 AM
27	Ansys ACP	Feb 28, 2012 7:38 AM



**Page 3, Q15. What post-processors do you use to post-process your data? (Check all that apply)**

28	ESI-VIEWER	Feb 24, 2012 9:53 AM
29	ANIMATOR	Feb 22, 2012 10:51 AM
30	Ansys ACP	Feb 21, 2012 10:59 PM
31	Mentat	Feb 20, 2012 3:03 PM
32	CADFiber	Feb 20, 2012 8:42 AM
33	ansys	Feb 20, 2012 12:40 AM
34	none currently	Feb 19, 2012 10:20 PM
35	SOLID EDGE	Feb 19, 2012 5:26 PM
36	MSC.Mentat	Feb 19, 2012 4:37 PM
37	ETA PreSys, LS-PrePost	Feb 19, 2012 12:28 PM
38	Ansys Workbench	Feb 18, 2012 9:38 PM
39	None	Feb 18, 2012 3:58 PM
40	ANSYS Workbench 14.0	Feb 18, 2012 12:34 PM
41	ANSYS Workbench ACP	Feb 18, 2012 9:24 AM
42	nx cae	Feb 18, 2012 9:02 AM
43	Mentat	Feb 18, 2012 8:46 AM
44	ANSYS	Feb 17, 2012 10:22 PM
45	Catia Analysis	Feb 17, 2012 10:04 PM
46	LS-PrePost, Matlab	Feb 17, 2012 9:31 PM
47	company code	Feb 17, 2012 9:00 PM
48	Real Ansys Excell	Feb 17, 2012 8:46 PM
49	Extreme Loading for Structures	Feb 17, 2012 8:22 PM
50	ESAComp; in house developments; Customized tools (ISAMI)	Feb 16, 2012 10:11 PM
51	In-house simulation tools	Feb 16, 2012 12:54 PM
52	ANSYS	Feb 15, 2012 7:54 PM
53	Own programmes	Feb 15, 2012 5:10 PM
54	TMP SLIM-VISION	Feb 15, 2012 1:57 AM



**Page 3, Q15. What post-processors do you use to post-process your data? (Check all that apply)**

55	NX	Feb 15, 2012 1:29 AM
56	workbench	Feb 14, 2012 10:34 PM
57	cadfem	Feb 14, 2012 9:27 PM
58	NX Advanced Simulation	Feb 14, 2012 7:38 PM
59	ANSYS APDL	Feb 14, 2012 3:06 PM
60	NISA	Feb 14, 2012 1:32 PM
61	NX	Feb 13, 2012 3:11 PM
62	Ansys LS-prepost	Feb 13, 2012 1:08 PM
63	SAMCEF Field	Feb 13, 2012 12:51 PM
64	Ansys Workbench	Feb 13, 2012 11:58 AM
65	in-house tools	Feb 13, 2012 11:50 AM
66	Laminate Tools, ESAComp, inhouse bespoke processing codes	Feb 13, 2012 8:31 AM
67	ANSYS ACP	Feb 13, 2012 6:28 AM
68	Laminate Tools	Feb 10, 2012 1:03 PM
69	acp	Feb 10, 2012 12:43 PM
70	ANSYS	Feb 10, 2012 8:01 AM
71	ACPPost	Feb 10, 2012 7:20 AM
72	Ansys Composite Pre/Post	Feb 9, 2012 5:05 PM
73	CATIA V5	Feb 9, 2012 4:33 PM
74	NX	Feb 9, 2012 4:28 PM
75	ComPoLyX	Feb 9, 2012 3:48 PM
76	NX Advanced Simulation and NX Laminate Composites	Feb 9, 2012 3:01 PM
77	ANSYS	Feb 9, 2012 2:42 PM
78	LSPP	Feb 9, 2012 2:30 PM
79	None	Feb 9, 2012 2:19 PM
80	ANSYS Composite PrepPost	Feb 9, 2012 1:37 PM
81	SimXpert	Feb 9, 2012 11:41 AM



**Page 3, Q15. What post-processors do you use to post-process your data? (Check all that apply)**

82	proprietary post-processors	Feb 8, 2012 3:34 PM
83	LS-DYNA Pre-Post	Feb 8, 2012 2:27 PM
84	LS-PrePost	Feb 8, 2012 9:57 AM
85	ANSYS Composites PrepPost SolidWorks Simulation	Feb 7, 2012 2:16 PM
86	own tools	Feb 7, 2012 9:58 AM
87	SolidWorks Simulation	Feb 7, 2012 9:08 AM
88	MSC Mentat	Feb 7, 2012 8:49 AM
89	ANSYS Composite PrepPost	Feb 7, 2012 7:51 AM
90	Samcef field	Feb 7, 2012 7:46 AM
91	META Post Animator	Feb 7, 2012 6:39 AM
92	MEDINA	Feb 7, 2012 5:59 AM
93	Nastran FX	Feb 5, 2012 4:06 PM



**Page 3, Q16. What type of analysis do you typically perform? (Check all that apply)**

1	OPTIMIZATION	Mar 27, 2012 11:23 AM
2	Forming, steady-state dynamics	Mar 23, 2012 8:14 AM
3	Thermo-mechanical (thermo-viscoelastic material needed)	Mar 22, 2012 6:27 PM
4	modal	Mar 22, 2012 6:02 PM
5	Occupant Safety	Mar 22, 2012 5:37 PM
6	Fatigue	Mar 22, 2012 12:34 PM
7	Dynamic shock events, a lot of contact modeling	Feb 25, 2012 9:44 PM
8	Thermo-elastic and hygroscopic (moisture release) distortion.	Feb 20, 2012 4:46 PM
9	Dynamic Analysis (Frequency Response and Random Vibration)	Feb 19, 2012 6:43 AM
10	NVH	Feb 19, 2012 4:59 AM
11	We also do modal and harmonic analysis	Feb 18, 2012 12:34 PM
12	Shock (mechanical and UNDEX), Blast, Vibration, Dynamic, Fluid/Structure Interaction	Feb 17, 2012 9:31 PM
13	fatigue dynamics	Feb 17, 2012 8:59 PM
14	Random and frequency response	Feb 17, 2012 8:38 PM
15	sonic fatigue; eigenfrequency; dynamic (sine fibration, random)	Feb 16, 2012 10:11 PM
16	AIREX, UNDEX	Feb 13, 2012 6:56 AM
17	thermal stress	Feb 9, 2012 2:55 PM
18	Flat pattern creation for production	Feb 9, 2012 11:41 AM
19	Dynamic Response	Feb 8, 2012 3:00 PM
20	Vibration analysis, active damping	Feb 7, 2012 5:59 AM
21	Dynamics!! How did you leave this out!	Feb 6, 2012 9:57 PM



**Page 3, Q17. What material data do you use in your simulation? (Check all that apply)**

1	Campus	Apr 4, 2012 7:15 AM
2	Granta MI	Mar 28, 2012 7:40 PM
3	Airbus spec	Mar 27, 2012 6:00 PM
4	fatigue and creep-ruture data	Mar 26, 2012 2:07 PM
5	Calculated Material properties acc. theories from literature	Mar 26, 2012 6:29 AM
6	Internal	Mar 23, 2012 1:54 PM
7	CAMPUS	Mar 22, 2012 6:27 PM
8	customer supplied and approved data	Mar 22, 2012 6:02 PM
9	None	Mar 22, 2012 4:59 PM
10	Moldflow linear predictions	Mar 22, 2012 4:43 PM
11	We do not do simulation analysis at this time	Mar 22, 2012 4:09 PM
12	dont know	Mar 22, 2012 2:35 PM
13	Exstream	Mar 22, 2012 1:21 PM
14	measurements form external lab	Mar 22, 2012 12:41 PM
15	OEM data	Mar 9, 2012 7:35 PM
16	ESAComp Databank	Feb 28, 2012 7:38 AM
17	NCAMP	Feb 28, 2012 1:01 AM
18	Personal data, customer data bases	Feb 25, 2012 9:44 PM
19	open literature publications, textbooks	Feb 20, 2012 10:04 AM
20	Hypothetical as well	Feb 19, 2012 5:45 PM
21	Testing is essential to determine the properties needed especially for nonlinear analysis. Matrix properties are critical. Degradation modes and properties are also critical. Energy release needed for cohesive models in delamination, VCCT, etc. are critical	Feb 19, 2012 4:37 PM
22	properties generated from manufacturing simulation	Feb 19, 2012 12:28 PM
23	DNV	Feb 18, 2012 9:24 AM
24	literature	Feb 17, 2012 10:34 PM
25	NCAMP material database for specific resin and fiber or our own qualification testing	Feb 17, 2012 10:04 PM



**Page 3, Q17. What material data do you use in your simulation? (Check all that apply)**

26	Literature	Feb 17, 2012 9:31 PM
27	NIAR	Feb 17, 2012 7:35 PM
28	MMPDS-04, IPC-4101	Feb 17, 2012 6:58 PM
29	design allowable testing	Feb 16, 2012 10:11 PM
30	NCAMP	Feb 16, 2012 12:54 PM
31	Estimated when it doesn't exist	Feb 15, 2012 5:10 PM
32	Campus	Feb 14, 2012 10:34 PM
33	Customer Supplied	Feb 14, 2012 9:30 PM
34	Generally test data using the same materials and representative processing.	Feb 14, 2012 7:38 PM
35	Client's databases.	Feb 13, 2012 8:59 AM
36	Qualified allowables data, typically resulting from a complete test campaign	Feb 13, 2012 8:31 AM
37	ESAComp material databank, published articles	Feb 13, 2012 6:56 AM
38	Literature review	Feb 10, 2012 1:10 PM
39	ECSS-E-HB-32-20	Feb 9, 2012 2:33 PM
40	Solidworks	Feb 9, 2012 2:19 PM
41	Customer supplied data	Feb 9, 2012 12:42 PM
42	Scientific papers and reports	Feb 9, 2012 11:54 AM
43	hypothetical optimum properties for designer composites	Feb 8, 2012 2:35 PM
44	Company internal B-basis qualification data	Feb 8, 2012 12:54 PM
45	Other material properties needed for process modelling	Feb 7, 2012 11:26 PM
46	from (scientific) publications	Feb 7, 2012 8:19 AM
47	our own data	Feb 7, 2012 7:59 AM
48	Literature	Feb 6, 2012 2:06 PM
49	MicMac data base	Feb 5, 2012 4:53 PM



**Page 3, Q18. Which of the following best describes your analysis approach? (Check all that apply)**

1	Limit loads	Mar 28, 2012 7:40 PM
2	mix of all approaches by the task	Mar 23, 2012 12:43 AM
3	I comparw FE results to hand calculations.	Mar 22, 2012 4:16 PM
4	We do physical testing - long term and short term	Mar 22, 2012 4:09 PM
5	Use orthotropic elasticity solutions, plates & shells solutons, and strength of materials solutions as checks	Feb 25, 2012 9:44 PM
6	Nonlinear simulation of composites is still very challenging. MSC.MARC has developed some outstanding and unique capabilities in many different aspects of the composites fabrication and application world.	Feb 19, 2012 4:37 PM
7	Look at results for smoothness and gradient of contor	Feb 17, 2012 8:46 PM
8	I benchmark analyses against simpler geometry, isotropic materials, loading, etc. that have known solutions, were possible	Feb 15, 2012 5:10 PM
9	The analysis plan for each application is developed as applicable to existing solutions, benchmark data, processes etc.	Feb 13, 2012 8:31 AM
10	Calculation used for sizing and critical/tested mode selection. Verification alwas by TESTs	Feb 13, 2012 7:54 AM
11	experiment if I have it	Feb 12, 2012 8:21 AM
12	I run different models with different element types or material behaviour law	Feb 10, 2012 1:10 PM
13	validation process from ESA and other clients	Feb 9, 2012 2:33 PM
14	N/A	Feb 9, 2012 2:19 PM
15	Compare with results from seme-closed form solutions that closely approximate the problem I am actually interested in.	Feb 8, 2012 2:27 PM



**Page 3, Q19. What type of optimization do you perform? (Check all that apply)**

1	airbus stacking rules	Mar 27, 2012 6:00 PM
2	BUCKLING	Mar 27, 2012 11:23 AM
3	none	Mar 22, 2012 5:06 PM
4	Look at different gate locations to influence above	Mar 22, 2012 4:16 PM
5	Do not	Mar 22, 2012 4:09 PM
6	Confidential cant discuss	Mar 22, 2012 2:35 PM
7	displacements, crash dummy injury measures	Mar 22, 2012 1:35 PM
8	geometry	Mar 22, 2012 12:41 PM
9	aterial data	Mar 22, 2012 11:10 AM
10	Really depend upon the specific structure and application	Feb 25, 2012 9:44 PM
11	angular deviation	Feb 20, 2012 8:42 AM
12	harmonic analysis	Feb 18, 2012 12:34 PM
13	fatigue life	Feb 17, 2012 8:59 PM
14	improved fracture/delamination resistance	Feb 15, 2012 5:10 PM
15	shrinkage and weld line	Feb 14, 2012 10:34 PM
16	typical engineering approach / no automatic optimalization	Feb 13, 2012 7:54 AM
17	Cost	Feb 10, 2012 12:21 PM
18	None	Feb 9, 2012 2:19 PM
19	not applicable	Feb 8, 2012 3:59 PM
20	Frequency response	Feb 7, 2012 5:59 AM



**Page 4, Q24. Where do you need the most help when simulating composites?**

1	Software capabilities and reliable material properties; particularly for strength/failure and curing/warpage predictions	Apr 10, 2012 6:05 PM
2	Obtaining the material properties.	Mar 30, 2012 6:19 PM
3	Benchmark examples; Failure criteria selection	Mar 30, 2012 6:06 AM
4	We don't	Mar 28, 2012 7:41 PM
5	high concentrated load introduction	Mar 27, 2012 6:03 PM
6	Lifetime Assessment	Mar 26, 2012 2:10 PM
7	- Confidence of fiber orientation determination with simulation - Simulation of industrial part : mesh size / element type for structural simulation / good adequacy with injection and structural mesh	Mar 26, 2012 8:43 AM
8	failure modelling for crushing modes	Mar 23, 2012 3:57 PM
9	Manufacturing process effects on the material properties	Mar 23, 2012 1:56 PM
10	In the selection and choice of models for simulation	Mar 23, 2012 11:01 AM
11	Fiber orientation impact	Mar 23, 2012 7:35 AM
12	fiber orientation - mat data from manufactures	Mar 23, 2012 6:49 AM
13	hardware power	Mar 23, 2012 12:46 AM
14	Measure and apply the appropriate material properties	Mar 22, 2012 6:29 PM
15	random oriented fibre failure prediction	Mar 22, 2012 6:03 PM
16	Building baseline test specimens to create baseline data	Mar 22, 2012 5:08 PM
17	Fiber orientation	Mar 22, 2012 5:06 PM
18	Failure predictions. widely ignored now.	Mar 22, 2012 4:45 PM
19	Correct fiber orientation prediction	Mar 22, 2012 4:17 PM
20	in the software	Mar 22, 2012 1:09 PM
21	debugging convergence issues	Mar 22, 2012 12:39 PM
22	failure model type theory	Mar 22, 2012 12:13 PM
23	WITH FAILURE CRITERIA	Mar 22, 2012 11:51 AM
24	failure fiber orientation	Mar 22, 2012 11:11 AM
25	Allowables and material properties	Mar 6, 2012 2:11 AM
26	Failure (delamination, fatigue, crushing, impact)	Feb 29, 2012 1:39 PM



**Page 4, Q24. Where do you need the most help when simulating composites?**

27	We need to change our largely phenomenological / semi-emprical way of analysing composite structures to one that is physics-based. We think the way to do this is through multi-scale modelling (micro-mechanics, homogenisation). We also need to account for multi-physics aspects: electrical conductivity --> Joule heating --> effect on mechanical properties or ageing?	Feb 29, 2012 8:07 AM
28	Energy absorption in axial crushing	Feb 28, 2012 4:20 PM
29	Technology process effects predictions	Feb 28, 2012 7:39 AM
30	Joint Failure	Feb 28, 2012 1:03 AM
31	Material data history	Feb 27, 2012 12:43 PM
32	Limited materials property data with valid MIL17 statics	Feb 25, 2012 9:46 PM
33	FE modeling examples	Feb 24, 2012 3:18 PM
34	Failure criteria selection vs test results/failure mode. Material properties determination/failure criteria.	Feb 24, 2012 12:07 PM
35	Failure, Vibration Control, Sensors/Actuators	Feb 22, 2012 5:39 PM
36	hybrid composites including interphases at bondlines	Feb 21, 2012 3:24 PM
37	Post processing for composite failure modes.	Feb 20, 2012 4:48 PM
38	importing ply schedules and changing ply orientation schedules	Feb 20, 2012 3:05 PM
39	Its really difficult in getting the material properties while simulating a pilot project, Finding the optimized orientation of the plies for the given problem	Feb 20, 2012 2:29 PM
40	material models	Feb 20, 2012 1:46 PM
41	contact simulation	Feb 20, 2012 10:06 AM
42	fibre angles and steering of the material in AFP process	Feb 20, 2012 8:43 AM
43	A few baseline methods with a detailed explanation of the variables with real world values that are commonly published or a way to convert available information to fit the problem requirements.	Feb 19, 2012 10:26 PM
44	Training of new users	Feb 19, 2012 10:05 PM
45	Highly Non linear analyses	Feb 19, 2012 5:46 PM
46	Much improved access to nonlinear composites properties and test data for comparison would be very valuable. More comparison of the best simulation techniques with tests and other predictions would be very valuable. Gathering and cross-referencing of this data into central "go-to" sources like NAFEMS would be very valuable. Listing of Consultants and Experts for help with challenging composites projects would be very valuable. Certification of level of training and expertise might be beneficial in the future once the need is high enough and the basis of knowledge has grown sufficiently; maybe premature	Feb 19, 2012 4:41 PM



**Page 4, Q24. Where do you need the most help when simulating composites?**

	now.	
47	failure modeling	Feb 19, 2012 12:29 PM
48	Obtaining correct orthotropic properties and assigning material orientations.	Feb 19, 2012 9:50 AM
49	Material Data	Feb 19, 2012 6:45 AM
50	1. Easy to use for modeling and post-process to display the detail 2. Be Intuitive to display the composite parts like the ture hardware 3. Composite material database 4. Provide more availabe design concepts into the simulation 5. Have the freedom to implement the customer/user defined model for new invented design concepts 6. Simulation about the chemical reaction in the curing process and its effects on the material properties or performance	Feb 19, 2012 5:07 AM
51	For determining the material properties	Feb 18, 2012 9:40 PM
52	Compare the result of experiment	Feb 18, 2012 5:52 PM
53	Better understanding the effects of the material properties along with the effect of elevated temperatures.	Feb 18, 2012 12:37 PM
54	Material properties verification and production consistency with analysis	Feb 18, 2012 9:06 AM
55	1.how honeycomb can be modelled 2.softwares donot have module for 3d woven composites 3.for thick structures how composites can be modelled as fo shell elements they use plane stress and plain strain assumptions.	Feb 18, 2012 3:14 AM
56	n/a	Feb 18, 2012 3:06 AM
57	Seniors	Feb 18, 2012 2:59 AM
58	selection of model	Feb 18, 2012 1:42 AM
59	Access to previous similar analysis results/reports.	Feb 18, 2012 12:28 AM
60	fea	Feb 17, 2012 10:58 PM
61	FE code usage, FE code bugs	Feb 17, 2012 10:23 PM
62	Generating material models	Feb 17, 2012 10:18 PM
63	Guidelines for which failure theory is applicable, fabric UD tape and hybrid laminates, we would do more fracture mechanics simulation if the correct properties were available or were a standard material qual test.	Feb 17, 2012 10:07 PM
64	material properties and correlating FEA with experimental results	Feb 17, 2012 9:36 PM
65	correct properties	Feb 17, 2012 9:21 PM
66	Material properties, fatigue data, cost data	Feb 17, 2012 9:01 PM
67	Getting customers to believe that Excel is better than there CPD	Feb 17, 2012 8:47 PM



**Page 4, Q24. Where do you need the most help when simulating composites?**

68	Material properties	Feb 17, 2012 8:42 PM
69	Material Properties	Feb 17, 2012 8:03 PM
70	Material Properties	Feb 17, 2012 7:47 PM
71	Calculating an FAA acceptable and easily calculated margin of safety.	Feb 17, 2012 7:38 PM
72	Baseline analysis	Feb 17, 2012 6:58 PM
73	For material allowable definition; staffing shortage; resin flow simulation;	Feb 16, 2012 10:17 PM
74	Validation procedures for models used in strength analysis Training for early to mid level analysts	Feb 16, 2012 12:56 PM
75	complex combinations of damage states	Feb 15, 2012 7:57 PM
76	Failure prediction using the correct allowables	Feb 15, 2012 6:41 PM
77	manufacturing simulations	Feb 15, 2012 11:41 AM
78	Choosing the right model type for the component loading regime, failure mode and criticality. Sourcing the right properties for each model.	Feb 15, 2012 9:25 AM
79	Link between Fibersim and the FEM	Feb 15, 2012 1:59 AM
80	cure, micro-crack degradation	Feb 15, 2012 1:31 AM
81	To asses the righth material data in order to account for fiber orientation.	Feb 14, 2012 10:35 PM
82	materials data matching material models	Feb 14, 2012 9:29 PM
83	Applicable failure theories for non-ideal materails (i.e. when you have non-pefect adhesion) and for materials with random fiber orientations (not unidirectional or woven materials).	Feb 14, 2012 7:42 PM
84	Crashworthiness	Feb 14, 2012 7:32 PM
85	Test verified modeling approaches for joint details	Feb 13, 2012 6:32 PM
86	Glass fibre compossite thermo plastics for strength, failure and impact	Feb 13, 2012 1:10 PM
87	Analysis and prediction. Correlations with tests.	Feb 13, 2012 9:01 AM
88	No science - easy definition of the area on geometry (FEM prepro) with layup identical with manufacturing process (example UD strap over schell - positioning with draping but crating automatic geometric/element borders)	Feb 13, 2012 8:11 AM
89	Obtaining material data.	Feb 13, 2012 6:30 AM
90	analysis method for machining fracture mechanism of Carbon composites,chiefly sandwich panels with inserts when machining-drilling and trimming.	Feb 13, 2012 1:08 AM
91	Damage Tolerance	Feb 12, 2012 3:32 AM



**Page 4, Q24. Where do you need the most help when simulating composites?**

92	Reliable material properties with traceability to test data to verify quality of data	Feb 10, 2012 10:30 PM
93	Define modelization approach and hypothesis which are the most suitable to a particular application. Define material properties	Feb 10, 2012 1:13 PM
94	Reliable Material database residual stresses. warpage. clear definition of and applicability of failure criteria. reliability of calculation and benchmarking of transverse shear stiffness and strength.	Feb 10, 2012 1:07 PM
95	Details like bolts and adhesive joint	Feb 10, 2012 12:21 PM
96	Application of theories	Feb 9, 2012 4:35 PM
97	Understanding the latest information available on failure theories and when they are applicable	Feb 9, 2012 4:30 PM
98	progressive failure and fatigue	Feb 9, 2012 3:13 PM
99	identifying appropriate failure mechanisms, thermo-mechanical stress analysis including stress-free temperature, bi-modulus materials	Feb 9, 2012 2:57 PM
100	selection of the most suitable fiber-resin system for weight optimisation	Feb 9, 2012 2:36 PM
101	Material parameters for first ply failure models How to model a specific part (shells / solids / combination)	Feb 9, 2012 1:40 PM
102	Stress concentration factors around bolt holes and other penetrations. The metal structure interaction would be a good benchmark analysis and how this is managed.	Feb 9, 2012 11:56 AM
103	Damage, failure and fatigue	Feb 9, 2012 11:35 AM
104	Efficient representation of as-built conditions	Feb 8, 2012 4:49 PM
105	Prediction of 2 piece failure from initial conditions ( impact damage, notches etc but NOT pristine) required for structural certification.	Feb 8, 2012 3:37 PM
106	Nothing that a university community can supply.	Feb 8, 2012 3:01 PM
107	Experimental Data to check theories and models.	Feb 8, 2012 2:06 PM
108	We need a progressive failure analysis that converges beyond the initial failure and continues all the way through fracture. The model parameters should be related to physical reality; not just picked randomly.	Feb 8, 2012 1:09 PM
109	Failure analysis	Feb 8, 2012 12:55 PM
110	Getting the right material data, combining theory to manufacturing process in real	Feb 7, 2012 2:24 PM
111	gathering material properties	Feb 7, 2012 8:51 AM
112	reliable constituents' data (even though hard or impossible to measure)	Feb 7, 2012 8:22 AM



**Page 4, Q24. Where do you need the most help when simulating composites?**

113	reviewing results	Feb 7, 2012 8:00 AM
114	Data Management and automatic transfer CAE-CAD	Feb 7, 2012 6:41 AM
115	Modelling of complex textile fiber architectures (preform)	Feb 6, 2012 8:22 PM
116	Modeling and Post-Processing	Feb 6, 2012 6:05 PM
117	Fracture/fatigue data from literature	Feb 6, 2012 2:07 PM
118	Material properties	Feb 3, 2012 7:46 AM
119	failure theories	Feb 2, 2012 3:18 PM

