

Appendix R

ThermNV - Post-processing multiple results sets


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ThermNV

Post-Processing of Multiple Results Sets

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Aerospace



ThermNV Status Summary

ThermNV is part of the ESATAN Thermal Suite

ThermNV 2.0 : released Mar. 2006

- enhanced post-processing & larger models

ThermNV 2.2 : released Aug. 2006

- Added “batch” capability


ThermNV 3.0 : released April 2007

- Cross comparison of multiple result sets

Limits Report Radiator to Unit 2 (SATELLIT_PAR0001_Unit1-Heat-Load-1.GFF2, 28/10/07 20:33)

	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18	-17
N.Radiator 1066 - Temperature															
N.Radiator 1067 - Temperature															
N.Radiator 1069 - Temperature															
N.Radiator 1078 - Temperature															
N.Radiator 1079 - Temperature															
N.Radiator 1066 - Temperature															
N.Radiator 1067 - Temperature															
N.Radiator 1069 - Temperature															

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ThermNV 3.0 – New Features

- Handling large models
 - Display list available for nodes, conductors and sub-models
- Comparison of model data against specified limits
 - Representation of limit data via a bar chart and/or a data report
- Comparison of model data against reference data
 - Support for sensitivity analysis and test correlation
- Support for cross-comparison between data sets
 - Cross-comparison available on Limits and Delta report

Limits Report Radiator to Unit 1 (Unit_polar_limits.csv, 28/10/07 20:59)

ID	Label	Limit Qualif (Deg C)	Limit guarantee (Deg C)	Min - uncertainty	Case of Min	Min	Max	Case of Max	Max + uncertainty	Limit guarantee (Deg C)	Limit Qualif (Deg C)
N.Radiator.1001	Radiator	-37.00	-34.50	-34.96	SAT_PAR0001.GFF2	-33.96	-23.35	SAT_PAR0003.GFF2	-22.35	-10.000	-9.000
N.Radiator.1002	Radiator	-37.00	-34.50	-32.45	SAT_PAR0001.GFF2	-31.45	-19.54	SAT_PAR0003.GFF2	-18.54	-10.000	-9.000
N.Radiator.1003	Radiator	-37.00	-34.50	-34.42	SAT_PAR0001.GFF2	-33.42	-22.63	SAT_PAR0003.GFF2	-21.63	-10.000	-9.000
N.Radiator.1071	Radiator	-37.00	-34.50	-33.88	SAT_PAR0001.GFF2	-32.88	-21.27	SAT_PAR0003.GFF2	-20.27	-10.000	-9.000
N.Radiator.1072	Radiator	-37.00	-34.50	-25.65	SAT_PAR0001.GFF2	-24.65	-4.699	SAT_PAR0003.GFF2	-3.699	-10.000	-9.000
N.Radiator.1073	Radiator	-37.00	-34.50	-33.42	SAT_PAR0001.GFF2	-32.42	-20.65	SAT_PAR0003.GFF2	-19.65	-10.000	-9.000
N.Radiator.1081	Radiator	-37.00	-34.50	-35.04	SAT_PAR0001.GFF2	-34.04	-22.93	SAT_PAR0003.GFF2	-21.93	-10.000	-9.000
N.Radiator.1082	Radiator	-37.00	-34.50	-32.65	SAT_PAR0001.GFF2	-31.65	-19.26	SAT_PAR0003.GFF2	-18.26	-10.000	-9.000
N.Radiator.1093	Radiator	-37.00	-34.50	-34.68	SAT_PAR0001.GFF2	-33.68	-22.58	SAT_PAR0003.GFF2	-21.58	-10.000	-9.000

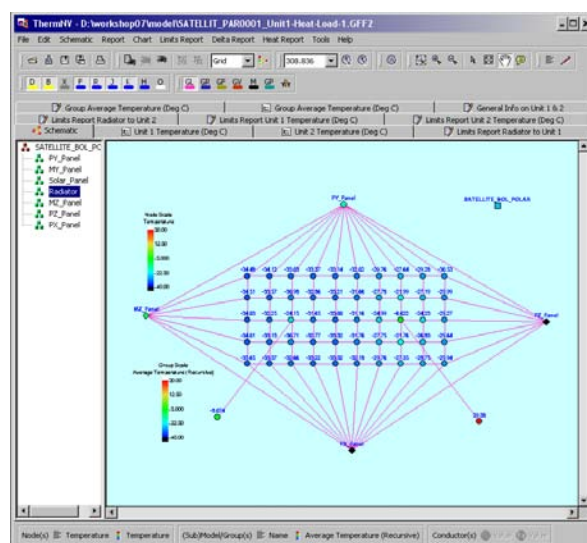
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ThermNV – Display List

- Handling large models
 - Display list available for nodes, conductors and sub-models
 - Used to switch on/off the display of any entity in the schematic
 - User preference for maximum number of nodes



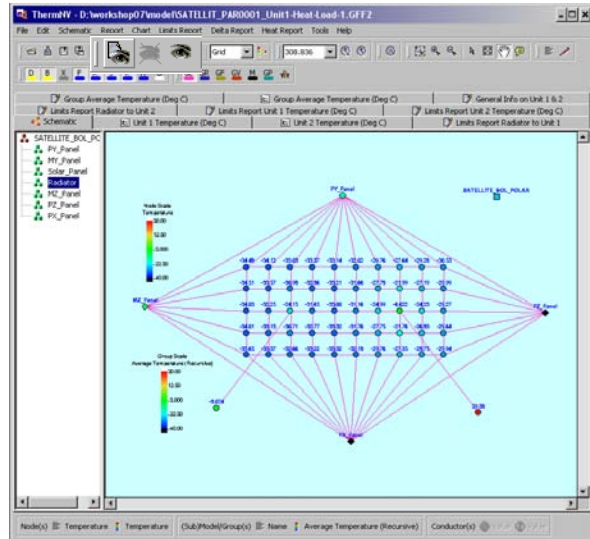
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ALSTOM

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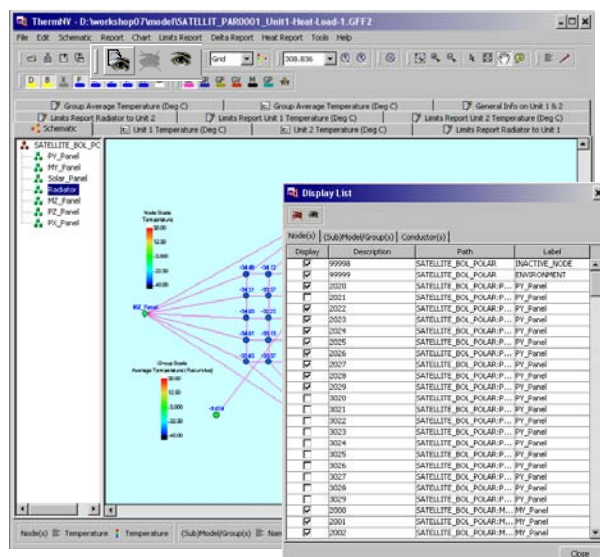
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ThermNV – Display List

- Handling large models
 - Display list available for nodes, conductors and sub-models
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ThermNV – Limits Report

- Comparison of model data against specified limits
 - Available for any attribute for nodes, conductors and sub-models
 - Representation of limit data via a bar chart and/or a data report
 - Lower (**LoLo, Lo**) and upper (**Hi, HiHi**) limits for minimum & maximum specifications
 - Limits data are either imported from a csv format file or entered in the GUI

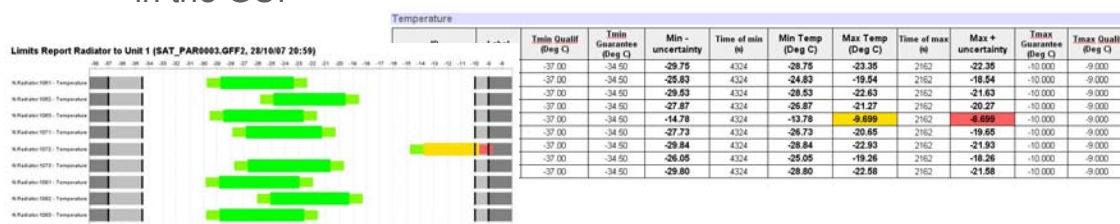
Limits Report Radiator to Unit 1 (SAT_PAR0003.GFF2, 28/10/07 20:59)

ID	Label	Tmin Qualif (Deg C)	Tmin Guarantee (Deg C)	Min - uncertainty	Time of min (h)	Min Temp (Deg C)	Max Temp (Deg C)	Time of max (h)	Max + uncertainty	Tmax Guarantee (Deg C)	Tmax Qualif (Deg C)
N.Radiator.1061	Radiator	-37.00	-34.50	-29.75	4324	-28.76	-23.35	2162	-22.35	-10.000	-9.000
N.Radiator.1062	Radiator	-37.00	-34.50	-25.83	4324	-24.83	-19.54	2162	-18.54	-10.000	-9.000
N.Radiator.1063	Radiator	-37.00	-34.50	-29.53	4324	-28.53	-22.63	2162	-21.63	-10.000	-9.000
N.Radiator.1071	Radiator	-37.00	-34.50	-27.87	4324	-26.87	-21.27	2162	-20.27	-10.000	-9.000
N.Radiator.1072	Radiator	-37.00	-34.50	-14.78	4324	-13.78	-8.699	2162	-8.699	-10.000	-9.000
N.Radiator.1073	Radiator	-37.00	-34.50	-27.73	4324	-26.73	-20.65	2162	-19.65	-10.000	-9.000
N.Radiator.1081	Radiator	-37.00	-34.50	-29.84	4324	-28.84	-22.93	2162	-21.93	-10.000	-9.000
N.Radiator.1082	Radiator	-37.00	-34.50	-26.05	4324	-25.05	-19.26	2162	-18.26	-10.000	-9.000
N.Radiator.1083	Radiator	-37.00	-34.50	-29.80	4324	-28.80	-22.58	2162	-21.58	-10.000	-9.000

ThermNV – Limits Report

- Comparison of model data against specified limits
 - Available for any attribute for nodes, conductors and sub-models
 - Representation of limit data via a bar chart and/or a data report
 - Lower (**LoLo, Lo**) and upper (**Hi, HiHi**) limits for minimum & maximum specifications
 - Limits data are either imported from a csv format file or entered in the GUI

Limits Report Radiator to Unit 1 (SAT_PAR0003.GFF2, 28/10/07 20:59)



ThermNV – Delta Report

- Comparison of model data against reference data
 - Support for sensitivity analysis and test correlation
 - Deviation (delta) from the reference available
 - RSS automatically calculated on selected nodes
 - Available for any attribute (T, QI, conductor heat flow...) and any user calculator.

Temperature				
ID	Label	Result	Nominal	Delta Nominal
N.PCB_1:1001	PCB 1	28.11	22.41	5.699
N.PCB_1:1002	PCB 1	28.99	23.26	5.727
N.PCB_1:1003	PCB 1	30.32	24.55	5.770
N.PCB_1:1004	PCB 1	32.23	26.39	5.838
N.PCB_1:1005	PCB 1	35.48	29.50	5.980
N.PCB_1:1006	PCB 1	35.40	29.44	5.965
RSS				14.28

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ThermNV – Cross Comparison of Data Sets

- Support for cross-comparison between data sets
 - Cross-comparison available on Limits and Delta report
 - Automatic cross-comparison report generated using ThermNV batch

Limits Report Radiator to Unit 1 (Unit_polar_limits.csv, 29/10/07 18:55)

Temperature											
ID	Label	Tmin Qualif (Deg C)	Tmin guarantee (Deg C)	Min - uncertainty	Case of Min	Min	Max	Case of Max	Max + uncertainty	Tmax guarantee (Deg C)	Tmax Qualif (Deg C)
N.Radiator1061	Radiator -37.00	-34.50	-34.50	-32.24	SAT.PAR0001.Unit1-1.GFF2	-31.24	-16.06	SAT.PAR0003.Unit1-3.GFF2	-15.06	-1.0000	0.000
N.Radiator1062	Radiator -37.00	-34.50	-34.50	-29.02	SAT.PAR0001.Unit1-1.GFF2	-28.02	-10.18	SAT.PAR0003.Unit1-3.GFF2	-9.183	-1.0000	2.000
N.Radiator1063	Radiator -37.00	-34.50	-34.50	-31.84	SAT.PAR0001.Unit1-1.GFF2	-30.84	-15.81	SAT.PAR0003.Unit1-3.GFF2	-14.81	-1.0000	2.000
N.Radiator1071	Radiator -37.00	-34.50	-34.50	-30.76	SAT.PAR0001.Unit1-1.GFF2	-29.76	-12.81	SAT.PAR0003.Unit1-3.GFF2	-11.81	-1.0000	2.000
N.Radiator1072	Radiator -37.00	-34.50	-34.50	-20.13	SAT.PAR0001.Unit1-1.GFF2	-19.13	8.996	SAT.PAR0003.Unit1-3.GFF2	8.996	-1.0000	2.000
N.Radiator1073	Radiator -37.00	-34.50	-34.50	-30.43							
N.Radiator1081	Radiator -37.00	-34.50	-34.50	-32.32							
N.Radiator1092	Radiator -37.00	-34.50	-34.50	-29.23							
N.Radiator1093	Radiator -37.00	-34.50	-34.50	-32.10							

Temperature										
ID	Label	Nominal	Min	Min Delta	Case of Min	Max	Max Delta	Case of Max	Delta RSS	
N.PCB_1:1001	PCB 1	22.41	9.778	-12.63	NonOp.GFF1	28.11	5.699	Hot.GFF1	13.86	
N.PCB_1:1002	PCB 1	23.26	9.777	-13.49	NonOp.GFF1	28.99	5.727	Hot.GFF1	14.65	
N.PCB_1:1003	PCB 1	24.55	9.775	-14.77	NonOp.GFF1	30.32	5.770	Hot.GFF1	15.86	
N.PCB_1:1004	PCB 1	26.39	9.774	-16.62	NonOp.GFF1	32.23	5.838	Hot.GFF1	17.61	
N.PCB_1:1005	PCB 1	29.50	9.774	-19.73	NonOp.GFF1	35.48	5.980	Hot.GFF1	20.61	
N.PCB_1:1006	PCB 1	29.44	9.773	-19.66	NonOp.GFF1	35.40	5.965	Hot.GFF1	20.55	
RSS									42.61	

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