

# Appendix N

## TCDT

### Distribution and maintenance

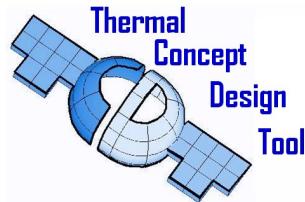
Andrea Tosetto      Matteo Gorlani  
(Blue Engineering, Italy)

Harrie Rooijackers  
(ESA/ESTEC, The Netherlands)

### **Abstract**

The activities of the 3rd M&D year will be described by focusing on new developments and installation adaptations for ESTEC CDF. A demonstration of the beta TCDT ver.1.3.1 with the new GUI and the 3DViewer with the satellite in orbit will be given. A presentation of a stochastic/parametric analysis by means of the parametric engine of the TCDT will be given in order to demonstrate the usefulness of the parametric approach introduced with version 1.3.0

# Thermal Concept Design Tool Distribution & Maintenance



**Andrea Tosetto**

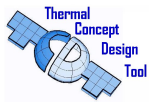
**Matteo Gorlani**

Blue Engineering, Torino, Italy

**Harrie Rooijackers**

European Space Agency, Noordwijk, The Netherlands

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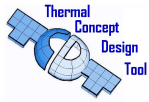


## Overview

- **Background**
- **Version 1.3.0 Improvements**
- **Next Version Improvements**
  - **Required by the Thermal Community**
  - **Required by CDF – ESTEC**
- **Maintenance Activity**

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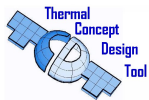


## Background

### 3° YEAR OF DISTRIBUTION & MAINTENANCE STARTED APRIL 2009

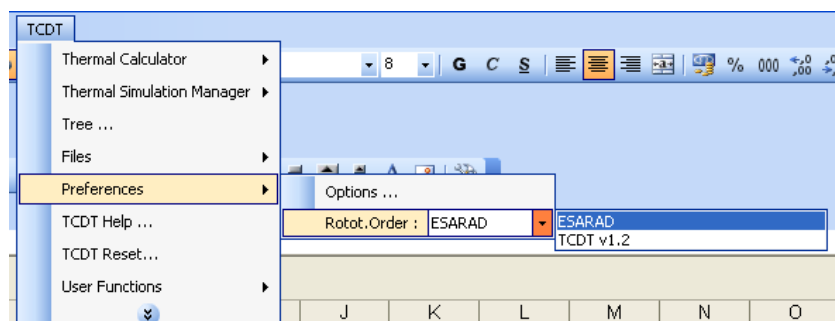
- TCDT is distributed FREE of CHARGE to the European Thermal Community
- TCDT web pages available for download, PR, FR
- TCDT is regularly maintained by BLUE
- Small developments are regularly implemented to improve operability
- TCDT version 1.3.1 will be available before the end of 2009

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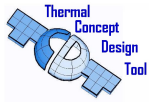
## TCDT 1.3.0 Improvements

- Rototranslation order selection :
  - ESARAD Default
  - TCDT v1.2.x



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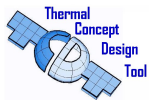


# TCDT Improvements (1/7)

**IMPROVEMENTS** derived from the last year survey

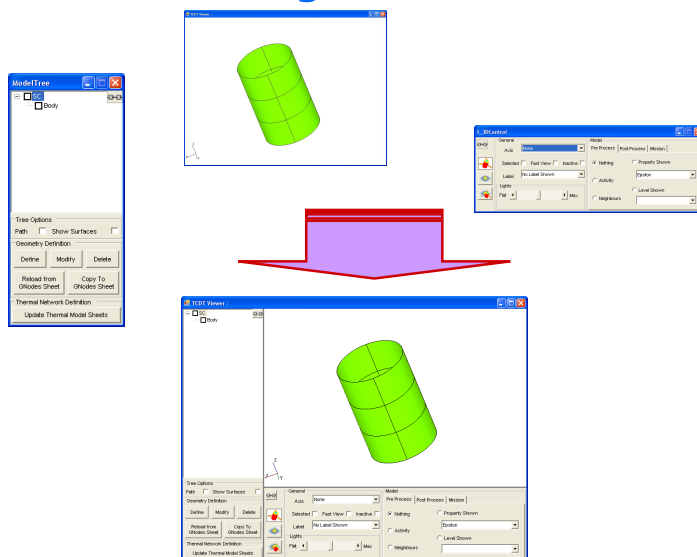
- Improvement of GUIs
- S/C Attitude Visualisation on Orbit
- Nodes and Conductors management

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# TCDT Improvements (2/7)

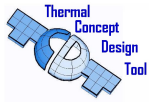
**Integration of Model related Controls**



- Anchoring
- Show/Hide windows

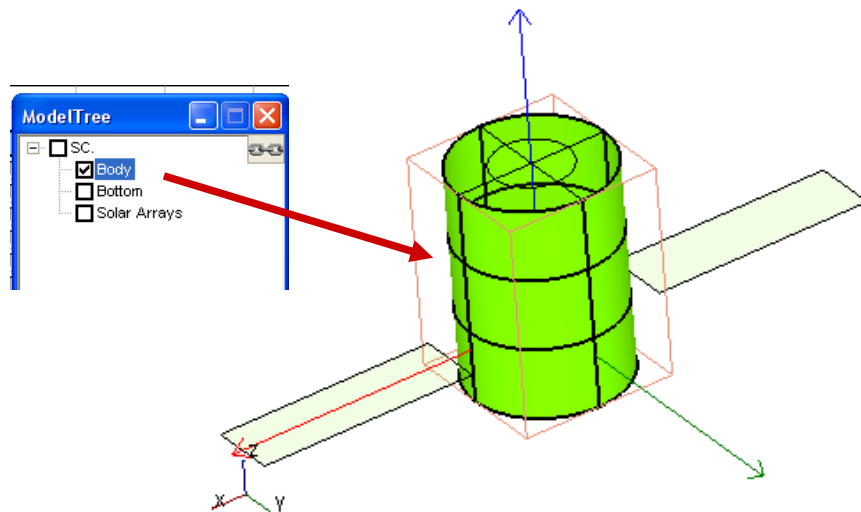
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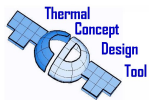


## TCDT Improvements (3/7)

Selected element/assembly main axis and containing box

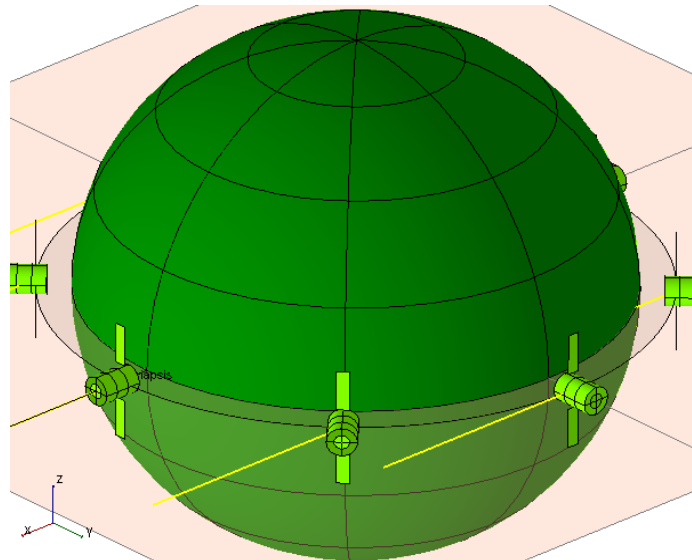


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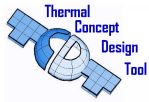
## TCDT Improvements (4/7)

Satellite Attitude visual check



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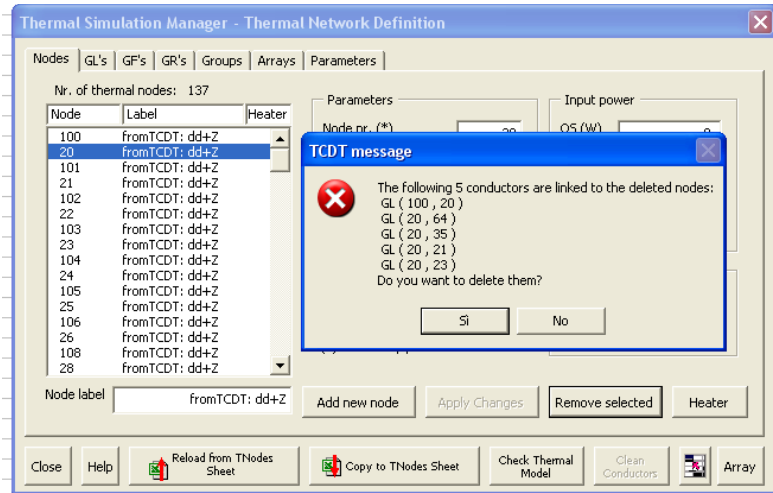




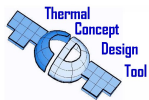
# TCDT Improvements (5/7)

## Improved Nodes deletion

Automatic deletion of the thermal network conductors after a nodes deletion.



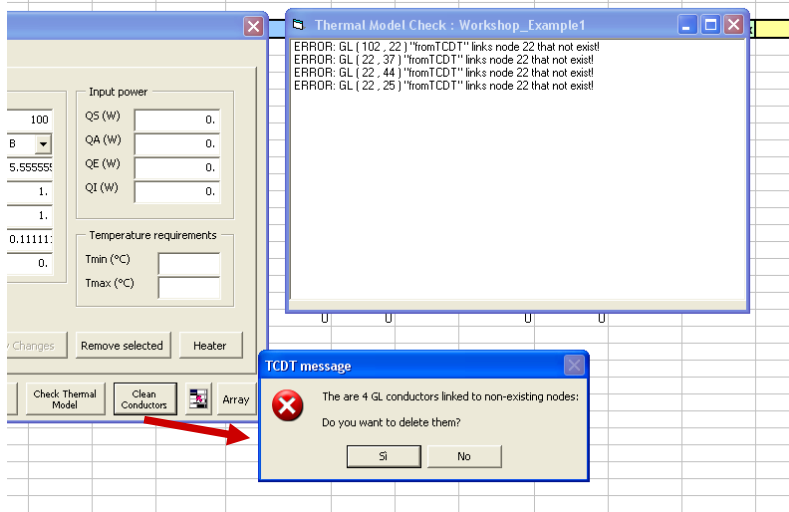
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# TCDT Improvements (6/7)

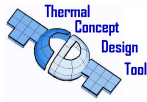
## Improved Model Check

Automatic deletion of the thermal network conductors not linked to any nodes (after checking the network).



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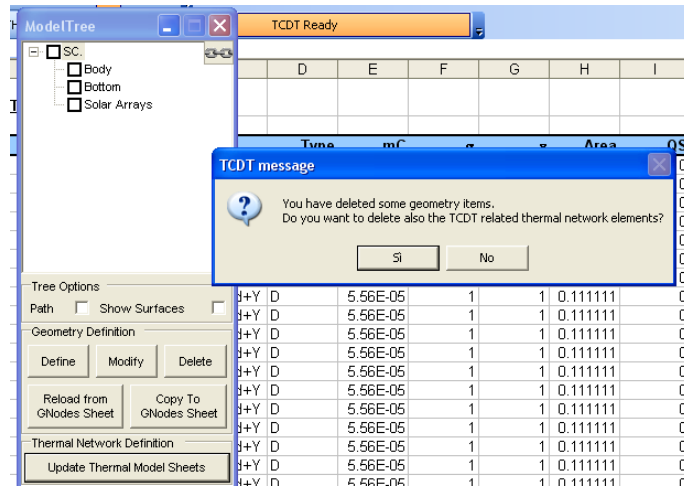




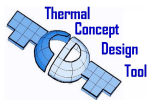
# TCDT Improvements (7/7)

## Improved Thermal Model Generation

**Automatic deletion of the thermal network relevant to the delete GMM's items**



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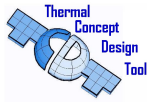
# TCDT CDF Improvements

- **Possibility to move the TCDTAddin to different folder**
- **Evaluating the possibility to use a common addin for PC with ThermXL installed or not.**
- **Aid users to update their useraddins to new TCDT versions**
- **Administrator management of the preferences.**

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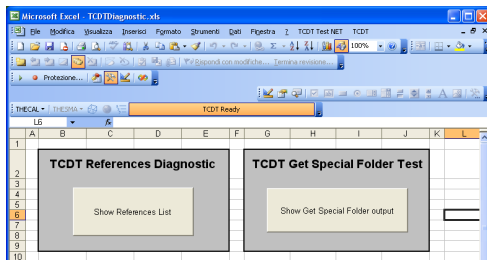




## TCDT Maintenance Activity (1/2)

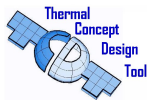
### Bugs Diagnosis

- A Diagnostic tool is prepared to be sent to users that encounter problems
- The tool analyze the status TCDT Addin and reports it.
- The tool is an excel file.
- Already successfully used



- Virtual Machines utilization
  - Excel 2000
  - Excel 2003
  - Excel 2007 (future)

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## TCDT Maintenance Activity (2/2)

### BUGS CORRECTION

Geometry generator :

- The box surfaces +Y and -Y are rotated of 180 degrees when the rototranslations order is "ESARAD"
- Solution: It will be corrected in the next TCDT version

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## TCDT Tips

With the TCDT is possible to :

- **Model Visual Check**
- **Postprocess results**
- **Model Parameterization**
- **Parametric Analysis**

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## TCDT Team

### DISTRIBUTION & MAINTENANCE

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The screenshot shows a Microsoft Excel spreadsheet titled "TCDT Geometric Nodes". The spreadsheet is organized into several columns: "Node ID's" (with sub-columns "Side1" and "Side2"), "Position Properties" (Rot Z, Tr X, Tr Y, Tr Z), "Geometric Properties" (Type, Dim1, Dim2, Dim3, Dim4, Dim5, Dim6), "Bulk Properties" (C, K, Density), "Solar Optical Properties Side1", and "Solar Optical Properties Side2". The rows list various geometric shapes like "Body", "Cylinder", "Disk", and "Button" with their respective dimensions and properties. A blue box with white text "TCDT v1.3.1 New Functionalities" is overlaid on the spreadsheet, pointing to a specific cell in the "Geometric Properties" column.

If clicking on the picture above does not run the movie then try opening the file 'movies/TCDTV131-Demo.html' manually.

