How effective is a spacecraft engineer using a tool without training?

Spacedesign Corporation **SPACE DESIGN**

TSS Training Classes

Hands-on TSS training sessions for engineers and thermal analysts

In Houston, Texas
October 2008

www.spacedesign.com

TSS Training Opportunities

Increase productivity and analysis capabilities by taking a TSS class!

TSS CLASSES OFFERED:

1 TSS Introduction

2 TSS Enhanced

3 TSS Advanced

Solving complex spacecraft design problems requires tools specifically tailored to solve those complex problems. Using a tool like TSS effectively can reduce design time and lower spacecraft cost. Spacedesign Training offers three training courses to allow users to quickly become effective users of the tool.

Three TSS training classes are offered: 1. The Introduction Class is a hands-on experience, where the student progresses through the thermal analysis process using a sample project. 2. An Enhanced Class will interactively demonstrate and teach users the new native-Windows version of TSS, and the many enhancements that have been added in TSS v12 and v13.
3. The Advanced Class teaches students to increase productivity and utilize the many features within TSS.

Who Should Attend

These classes are appropriate for engineers, thermal analysts, and managers.   The hands-on user-friendly sessions are designed for anyone interested in technical skills development, increasing productivity, and expanding the analysis capabilities of both individuals and your company.

"The TSS training classes were very helpful in regards to learning the current software and also for providing a preview of future upgrades and capabilities."

- Ron Akau
Sandia National Laboratories

TSS Introduction Class

Often, analysts are tasked with modeling and predicting on-orbit thermal characteristics of a spacecraft or satellite. The TSS Introduction Class provides the training needed to accomplish these tasks during user-friendly hands-on sessions. By taking the student through the complete thermal analysis process using TSS, they emerge ready to apply these skills and techniques for their analysis needs.

TSS Introduction Class (continued)

This is a 2-day hands-on class where each student will build a sample project and progress through each TSS application needed to complete an analysis. A thermal analysis task typically includes many steps and requirements, which are each taught during the interactive sessions in the Introduction Class. Often, these include the need to:

- Import or build a geometric model (CAD input)
- Define orbital mechanics with vehicle articulation
- Set-up batch scripts to efficiently run multiple jobs
- Determine radiation exchange and heating from natural or artificial sources
- Define thermal connections within the geometric model
- Solve and post-process orbital temperatures

The TSS Introduction Class will provide each student with the tools needed to perform their analysis tasks using the industry standard for thermal analysis software. These skills and techniques can easily be used to support thermal design and development at the highest level.

"TSS can be simple and effective for complex problems"

- Joseph Clay
  President
  Spacedesign Corporation

TSS Enhanced Class

Thermal analysis needs are constantly evolving, which is why Spacedesign Corporation is consistently adding features and improving on the industry standard performance of its TSS software. The TSS Enhanced Class focuses on the latest and most powerful features that have been implemented in TSS in order to meet the ever-increasing demands on thermal analysts. Much of the class will feature the latest native-Windows TSS v13, which has a completely updated user-interface with a comfortable 'Windows-like' feel.

This 1-day class is a hands-on session which focuses on the new features that have been added to the latest TSS versions, as well as instruction on using the new native-windows TSS v13. Some of the course modules available are:

- Using our new native-Windows Transfer application to move CAD models to and from TSS.

"Familiar for experienced users, easier to learn for new users."

- Darrell Spice
  Windows Programmer
  Spacedesign Corporation

TSS Enhanced Class (continued)

- Using Boolean operations to define and analyze a geometry
- Including participating media in analysis calculations
- Using Sinda/Fluint v4.3C
- Radiation pressure methodology and use
- Using the Lunar Computed Surface Radiation (CSR) model
- Using Mesh and Conductance-Capacitance to mesh geometry parts and easily attach solid elements to radiation surfaces. This is especially useful in modeling thermal blankets.

"Transfer significantly reduces the time needed to convert CAD models into TSS."

- Greg Imhoff
  Transfer Lead Developer
  Spacedesign Corporation

The Enhanced class features a hands-on session designed to take each student through a tour of the new native-Windows TSS v13, including how to use and input data on the redesigned user-interface forms. Supervisors and managers can learn about advanced analysis capabilities, which can be used to expand the scope of services offered to their customers.

TSS Advanced Class

When a thermal analyst has achieved some proficiency and experience using a software tool, they often look for ways to streamline the process, expand the scope of their analysis, and increase their productivity. To accomplish these goals, TSS is designed to allow each analyst to tailor their methodology using powerful techniques and capabilities as needed for their analysis. The TSS Advanced Class will teach alternate analysis methods; demonstrate the advanced analysis capabilities; and demonstrate the power that can be unleashed using the TSS Command Language.

This is a 2-day hands-on experience which focuses on the more advanced TSS techniques and features. The course modules can greatly improve productivity and allow the capability to provide a wide range of analyses. The topics listed below are some of the TSS Advanced Class modules available:

- Utilizing the power of the TSS Command Language to increase productivity and implement advanced analysis techniques

TSS Advanced Class (continued)

- How to perform panel analysis quickly and easily
- Modeling and methodology for Planetary Surface heating analysis
- Using the Conduction-Capacitance application as a conduction database
- How to model ground-based heliostats
- How to export your TSS model and temperatures to a NASTRAN compatible format
- Comparing the benefits and uses between Radiosity and Monte Carlo calculation methods
- How to model specular surfaces, and their impact on a thermal model
- Comparing finite element and finite volume modeling methods
- A general discussion of advanced methodologies and techniques

The TSS Advanced Class is presented in a hands-on user-friendly environment, encouraging student participation and interaction. The class has an open format for any special topics and requests, allowing the students to get the maximum benefit for their specific needs. The wide variety of advanced TSS capabilities and methods taught in this class will broaden the capabilities and increase productivity for all those who attend.

"TSS training sessions are tailored to meet the specific needs of each student."

- Joseph Lepore
  Training Instructor
  Spacedesign Corporation

Registration

Pre-Registration is open and space is limited, so please take this opportunity to pre-register now. Pre-registration will guarantee availability and there is no penalty for cancellation. Pre-registrants will receive detailed information about class scheduling and venue located in Houston, TX. Indicate your interest below.

Please call regarding price and schedule information for on-site training classes.

Contact Us at:

(713) 522-0230 or
sales@spacedesign.com

for scheduling and reservations

-- Enrollment Form --

To Enroll in TSS Training Classes please fill out the information below, and FAX or E-MAIL to:

Joseph Clay
Spacedesign Corporation
Fax – (713) 522-0257
E-mail – sales@spacedesign.com

Student Information:

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip Code _____

Phone _____ Fax _____

E-Mail _____

Additional Information: _____

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Sign up for:	Location	Date	Price*
☐ TSS Introduction	Houston	October 2008	$2,600
☐ TSS Enhanced	Houston	October 2008	$1,600
☐ TSS Advanced	Houston	October 2008	$2,600

* Prices are per person. Group discounts are available.

Call (713) 522-0230 for availability and scheduling.

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