

8. Introduction to PWB Thermal Analyses

Course Leader: *Patrick Loney - Northrop Grumman*

Course Description:

Printed Wire Boards (PWBs) are present in almost every piece of electronics. This includes the SIM card in your phone, the backplane in your laptop, and the high-power card assembly in power supplies. Usage and complexity are increasing. Increasing part and power densities on PWBs necessitates increased attention to PWB thermal performance. No two PWBs are identical but the approaches needed to develop thermal models all follow good, sound, thermal engineering basics. In this course, attendees will learn how to categorize cooling techniques for PWBs, predict temperature gradients, and compare part temperature predictions with acceptable limits.

Course Outline:

1. Purpose of the PWB Thermal Analysis
2. Cooling Configurations Covered in this Course
3. Basic Inputs
4. Defining the Component Model
5. Harvesting Data from the Datasheet
6. Modeling the Part on the Board
7. Applying Boundary Conditions
8. The PWB Stackup
9. Determining Run Cases and Configurations
10. Augmenting Heat Transport Capability

Who Should Attend: The class targets the front-line thermal engineer. Since the course material focuses on the process of PWB thermal modeling, all experience levels of engineers and managers will benefit from attending.

Patrick Loney recently celebrated his 30th anniversary with Northrop Grumman Corporation. He has over 35 years of experience in the thermal engineering/electronics cooling industry. He received his Bachelor of Sciences degree in Nuclear Engineering from the University of Illinois and his Master of Sciences degree in Mechanical Engineering from Cleveland State University. He holds several US Patents and Trade Secrets, mostly dealing with thermal management and electronics cooling techniques. He has presented similar courses to internal customers as well as the 2019 IPC AMEX Expo