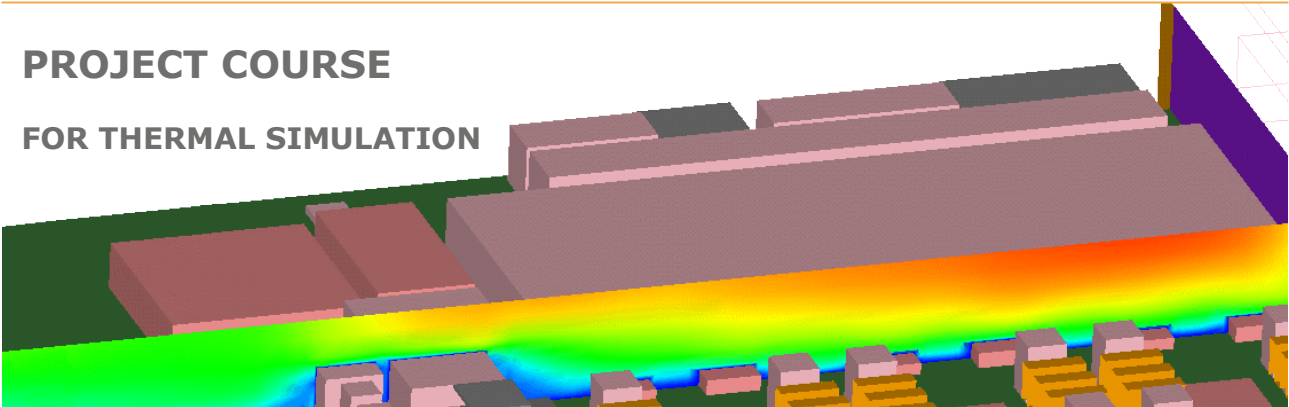


PROJECT COURSE

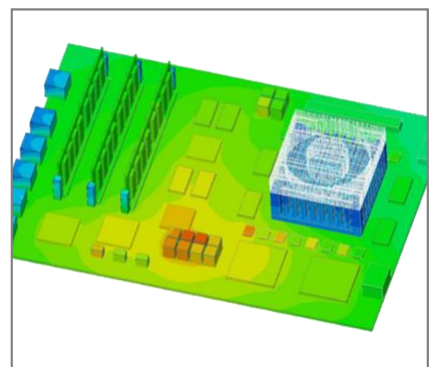
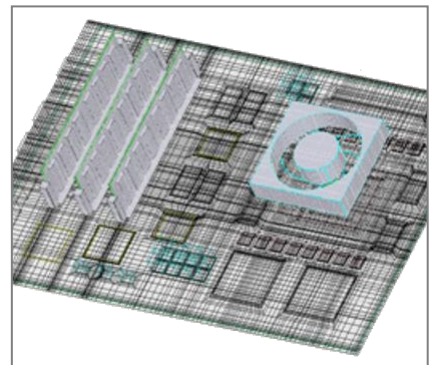
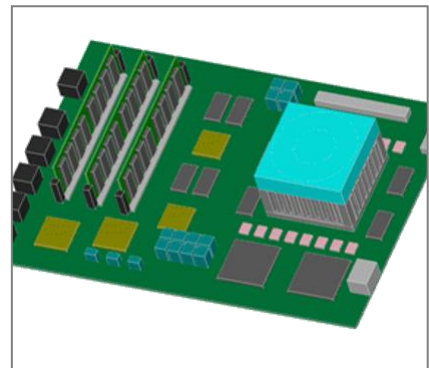
FOR THERMAL SIMULATION



Project Course for Thermal Simulation (CFD)

- Customer request including information on the project, model design, basic data, etc.
- Feasibility check performed by DELTA IDL Inc. (if necessary on the spot)
- Offer preparation including a project plan with detailed assessments of expenses, variants, and time
- Placing of order by the customer, provision of all relevant data and parameters
- Calculation model and mesh generation, model and data collation and completion of possibly missing data
- simulated calculation - state analysis, assessment, optimization proposals
- Presentation of results (if necessary on the spot), display of the model, record of boundary parameters, detailed explanation of results, and optimization suggestions on request
- Consideration of variants, assessment, discussion of results, optimization and comparison
- Final presentation of calculation results, further consideration of variants if needed
- Results report after project completion, detailed documentation
- Handover of data results and project documents (if not otherwise agreed)
- Outgoing invoice

With the aim of highest quality, we guarantee fast and efficient project completion with strong collaboration, communication, high transparency, and flexibility - cost efficiently and competent.



REQUIREMENTS OF THERMAL SIMULATION

Provision of all relevant data and parameters.

Requirements for offer preparation:

- Basic information
 - Mechanical data (drafts, CAD data, models, prototypes, etc.)
 - Test object (component, system)
 - Aim of analysis and level of detail (as agreed upon with the customer)
- Desired information
 - data of total power loss
 - Position of the main sources of power loss
 - Fan data, characteristic lines
 - Definition of boundary parameters (ambient temperature, climate, etc.)

Data for project implementation:

- see "Basic information" and "Desired information"
- Provision of missing data
- Joint development of the spectrum of requirements and model comparison
- Alternative usage of average, estimated or experience values for unknown or unobtainable parameters

Summary: see checklist

Notes:

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CHECKLIST

Issue	Description	Data available?		Alternative Parameters
		yes	no	
Mechanical Data	Design Data: 3D models, drafts, designs, models, prototypes, material values, etc.	✓		⊗
Components, Units	Fans: Type, characteristic lines, position, features (housing, etc.)	✓		✓
	Components (active): Power loss, position, geometric data, manufacturer information (thermal resistance, permissible temperatures)	✓		⊗
	Circuit boards: Basic structure, numbers of layers, copper content, material values			✓
	Heat sink: Position, geometric data, material, poss. manufacturer information (thermal resistance, permissible temperatures), installation type			✓
	Components (passive): Position, geometric data, material, etc.			✓
	Housing Opening and Perforated Metal Sheets: Position, geometric data, degree of opening, poss. pressure loss coefficient, etc.	✓		✓
	Filters: Position, geometric data, characteristic line, loading conditions, etc.	✓		✓
	Other: Position, geometric data, material, power loss, thermal resistance, etc.	✓		✓
Boundary Parameters	Environmental Conditions: Temperature (max./min.), flow, other	✓		
	Installation Conditions: System integration, flow, influence of other units (fans, etc.)	✓		
Other				