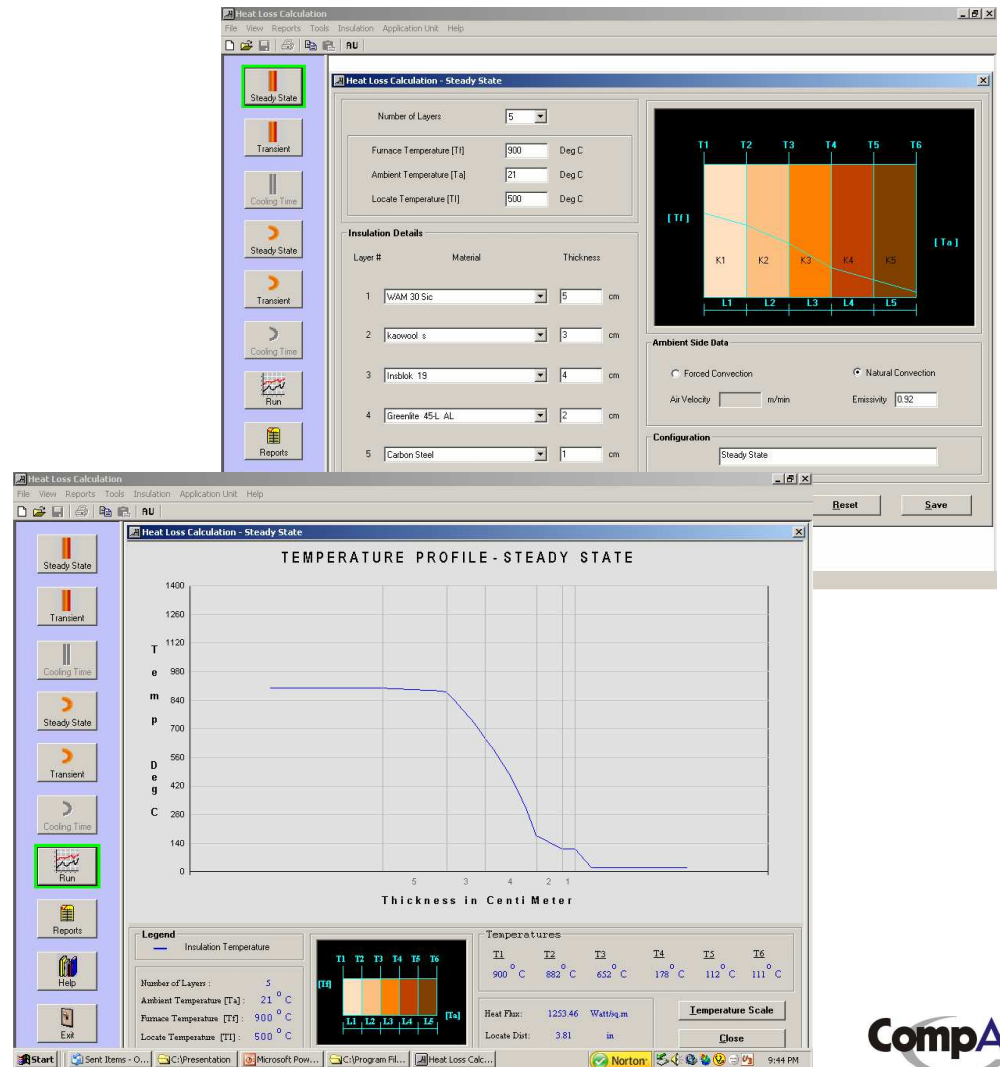


FurnXpert – Refractory Heat Loss



FurnXpert Refractory Heat Loss Program enables user to calculate heat loss through several refractory layers and calculates junction temperature and temperature gradient in each refractory layers.



Heat Loss Calculation Functions

The screenshot shows the 'Heat Loss Calculation' software interface. The main window displays a 'SETUP FURNACES' screen with a furnace image and descriptive text. A vertical toolbar on the left contains several icons, each with a callout bubble pointing to it:

- Steady State**: Callout bubble labeled 'STRAIGHT WALL STEADY STATE'.
- Transient**: Callout bubble labeled 'STARIGHT WALL TRANSIENT'.
- Cooling Time**: No callout.
- Steady State** (curved wall icon): Callout bubble labeled 'CURVED WALL STEADY STATE'.
- Transient** (curved wall icon): Callout bubble labeled 'STARIGHT WALL TRANSIENT'.
- Cooling Time** (curved wall icon): No callout.
- Run**: Callout bubble labeled 'RUN'.
- Reports**: Callout bubble labeled 'REPORT'.
- Help**: No callout.
- Exit**: No callout.

The main window content includes the following text:

SETUP FURNACES

FurnXPERT is a desktop software that simplifies the job of SETTING UP and SIMULATING industrial furnaces. The software has been developed to aid process engineers and furnace operators configure their furnaces, select parts, and run what-if analysis to determine the best furnace operating parameters.

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UNIT SYSTEM: Metric TYPE: Insulation



English And Metric

Unit Selection

English	in	Energy	Btu
English		Production Rate	lbs/hr
Metric		Power	Btu/hr
Length		Energy Consumption	Btu/lb
Time	min	Flow	Cfh
Temperature	Deg F		
Weight	lbs		
Velocity	in/min		

Ok Cancel Apply

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- Steady State
- Transient
- Cooling Time
- Steady State
- Transient
- Cooling Time
- Run
- Reports
- Help
- Exit

UNIT SYSTEM: English TYPE: None

Steady State Inputs – Straight Walls

The screenshot displays the 'Heat Loss Calculation - Steady State' window. The interface includes a sidebar with various calculation modes, a main input area, an insulation details table, a temperature profile graph, and ambient side data.

Number of Layers: 5

Furnace Temperature [Tf]: 900 Deg C

Ambient Temperature [Ta]: 21 Deg C

Locate Temperature [Ti]: 500 Deg C

Insulation Details:

Layer #	Material	Thickness
1	WAM 30 Sic	5 cm
2	kaowool s	3 cm
3	Insblok 19	4 cm
4	Greenlite 45-L AL	2 cm
5	Carbon Steel	1 cm

Temperature Profile Graph: A graph showing temperature distribution across five layers (L1 to L5). The furnace temperature [Tf] is on the left, and ambient temperature [Ta] is on the right. Interface temperatures T1, T3, T4, T5, and T6 are marked at the boundaries of the layers. A callout box labeled 'Five Layers of Refractory' points to the first four layers (L1-L4).

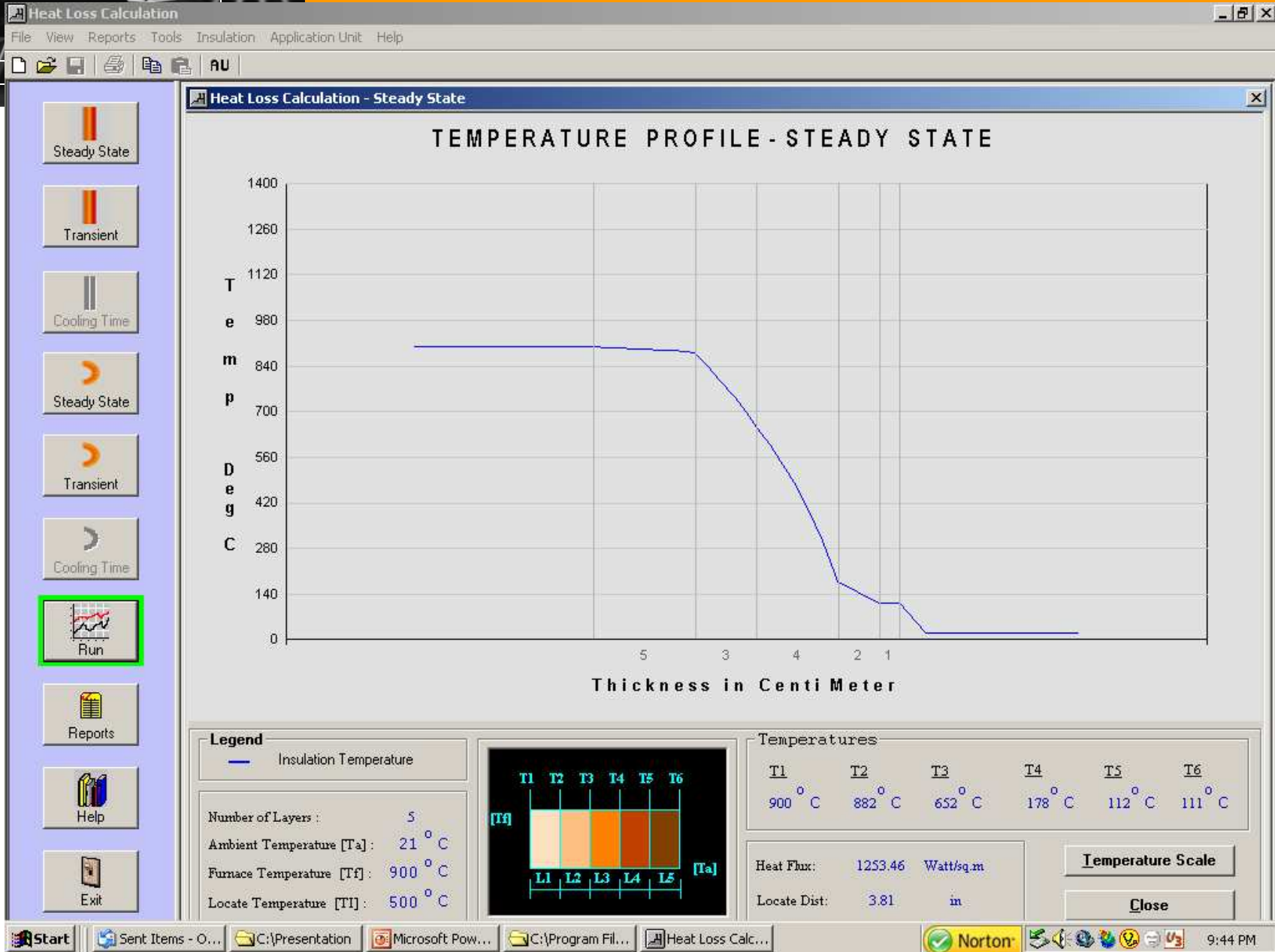
Ambient Side Data:

- Forced Convection
- Natural Convection
- Air Velocity: m/min
- Emissivity:

Configuration: Steady State

Buttons: Close, Reset, Save

Steady State Run – Straight Walls



Steady State Report – Straight Walls



Transient Inputs – Straight Walls

Heat Loss Calculation - Transient

Number of Layers: 3
Furnace Temperature [Tf]: 100 Deg C
Ambient Temperature [Ta]: 35 Deg C

Insulation Details

Layer #	Material	Thickness
1	WAM 60 Sic	5 cm
2	kaowool s	3 cm
3	ANH Insboard 2300	2 cm
4		cm
5		cm

Time Temperature Inputs

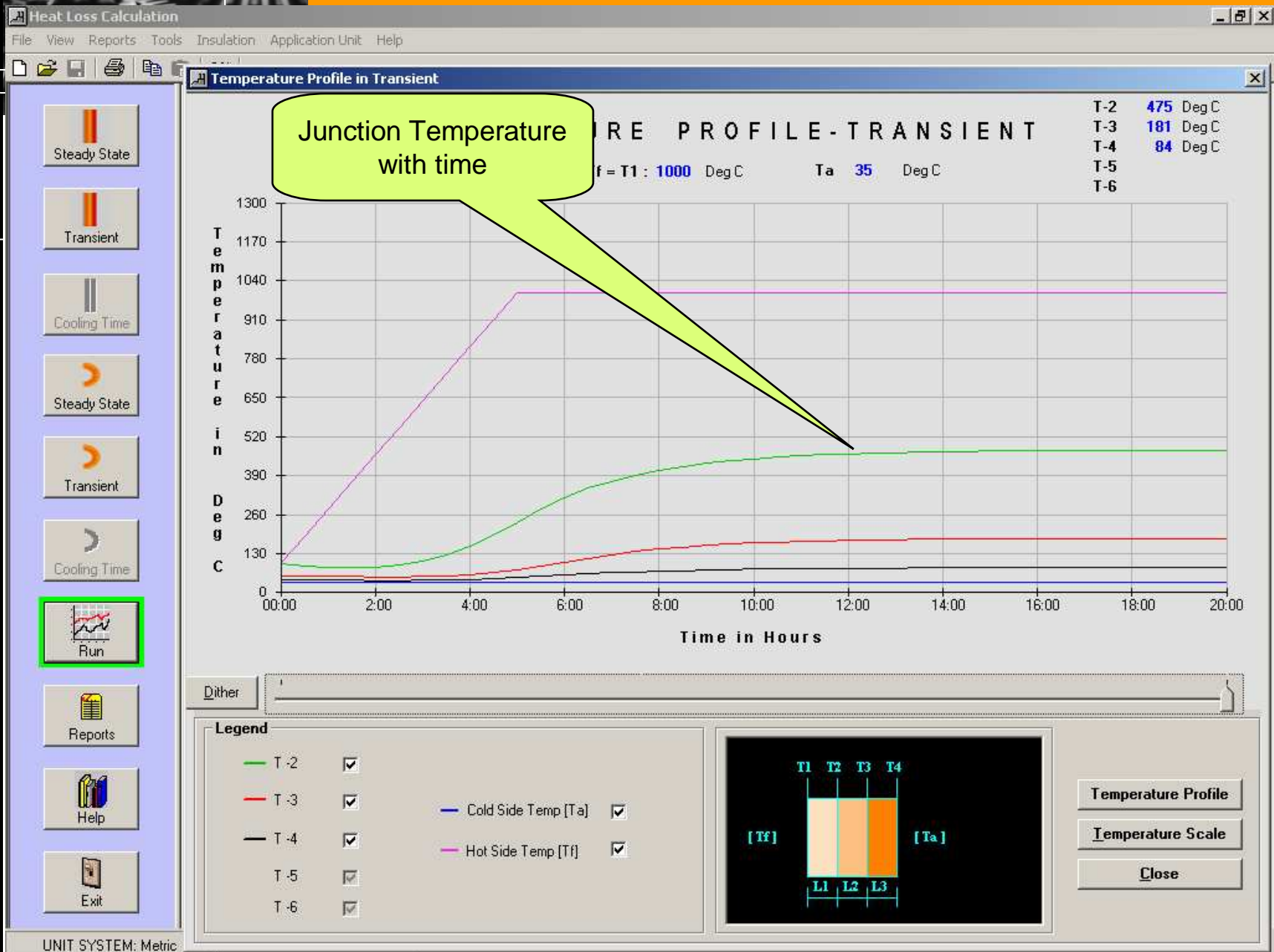
Number of Entry: 3 Total Time: 20 Hrs.

	1	2	3	4	5	6	7	8	9	10
Hrs.	0	5	20							
Deg C	100	1000	1000							

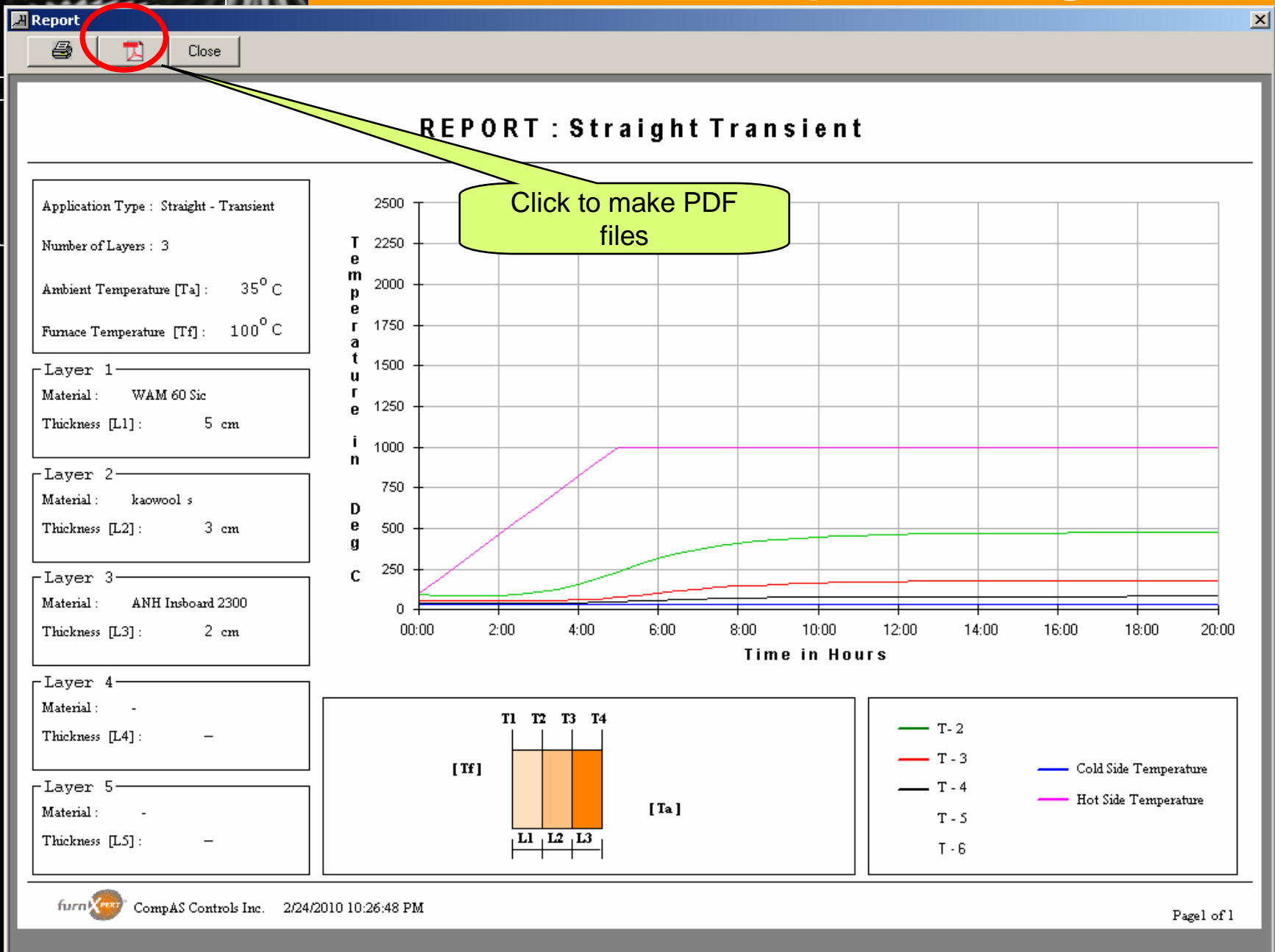
Close Reset Save

UNIT SYSTEM: Metric TYPE: Straight - Transient

Transient Run – Straight Walls



Transient Report – Straight Walls



Steady State Inputs – Curved Walls

The screenshot displays the 'Heat Loss Calculation' software interface. The main window is titled 'Heat Loss Calculation' and contains several input fields and a central visualization. A yellow callout bubble points to the 'Number of Layers' field, which is set to 5, and the central visualization, which shows a cross-section of a curved wall with five layers labeled K1 through K5. The 'Insulation Details' section is highlighted with a red box and contains a table with five rows of material and thickness data. The 'Ambient Side Data' section shows 'Natural Convection' selected with an emissivity of 0.92. The 'Configuration' section shows 'Steady State Curved' selected. The software interface also includes a menu bar (File, View, Reports, Tools, Insulation, Application Unit, Help), a toolbar, and a sidebar with buttons for 'Steady State', 'Transient', and 'Cooling Time'. The Windows taskbar at the bottom shows the Start button, several open applications, and the system tray with the time 10:36 PM.

Number of Layers: 5

Furnace Temperature [Tf]: 900 Deg C

Ambient Temperature [Ta]: 32 Deg C

Locate Temperature [Ti]: 700 Deg C

Furnace Inside Radius: 20 cm

Insulation Details

Layer #	Material	Thickness
1	WAM 60 Sic	5 cm
2	kaowool s	3 cm
3	Insblok 19	4 cm
4	Greenlite 45-L AL	2 cm
5	Carbon Steel	1 cm

Ambient Side Data

Forced Convection Natural Convection

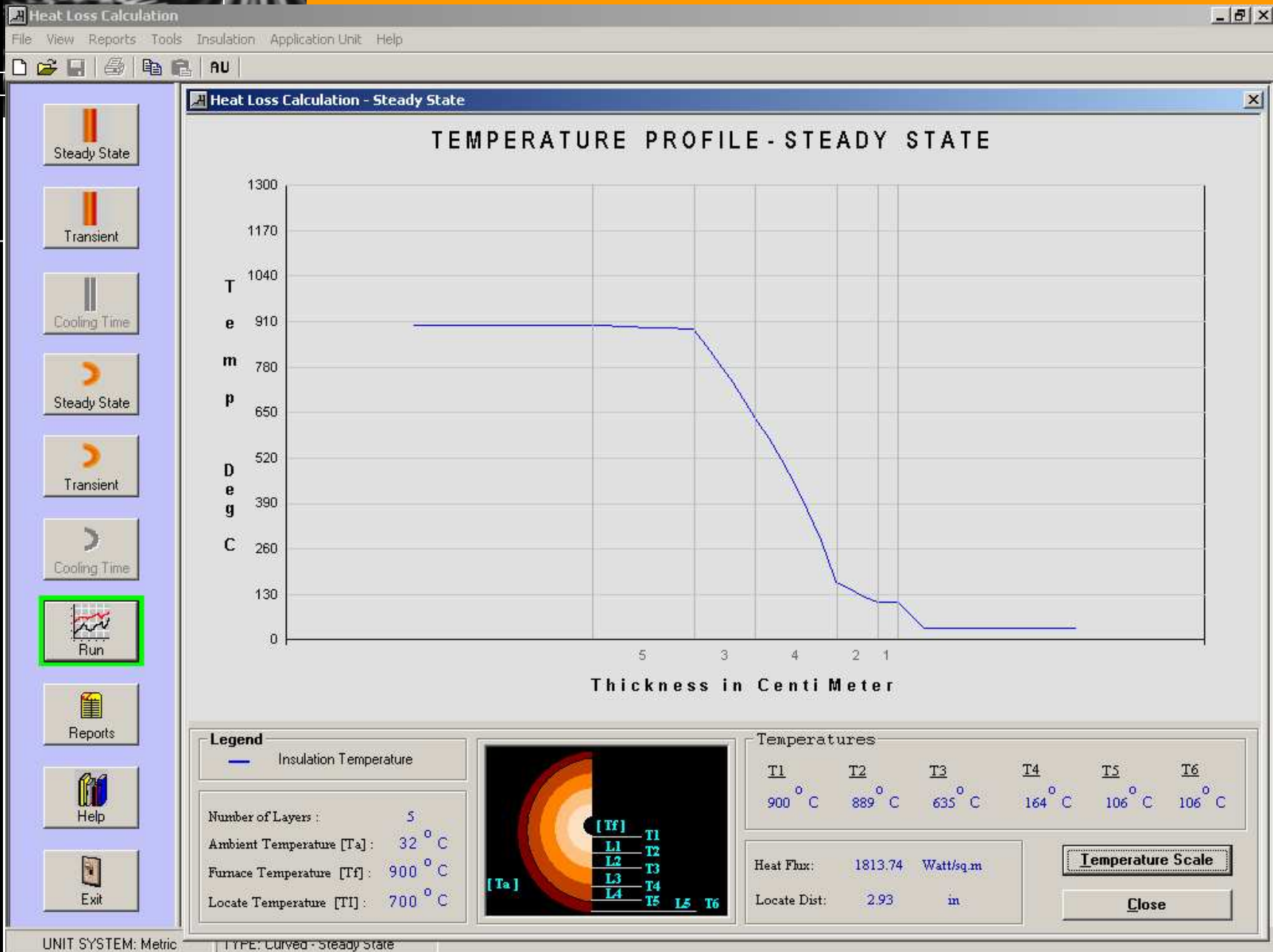
Air Velocity: m/min Emissivity: 0.92

Configuration

Steady State Curved

Close Reset Save

Steady State Run – Curved Walls



Transient Inputs – Curved Walls

Heat Loss Calculation

File View Reports Tools Insulation Application Unit Help

Heat Loss Calculation - Transient

Number of Layers: 3

Furnace Temperature [Tf]: 100 Deg C

Ambient Temperature [Ta]: 32 Deg C

Furnace Inside Radius: 20 cm

Insulation Details

Layer #	Material	Thickness
1	WAM 60 Sic	5 cm
2	kaowool s	3 cm
3	ANH Insboard 2300	2 cm
4		cm
5		cm

Time Temperature Inputs

Number of Entry: 3 Total Time: 20 Hrs.

Hrs.	1	2	3	4	5	6	7	8	9	10
0	0	5	20							
Deg C	100	900	900							

Ambient Side Data

Forced Convection Air Velocity: m/min
 Natural Convection Emissivity: 0.92

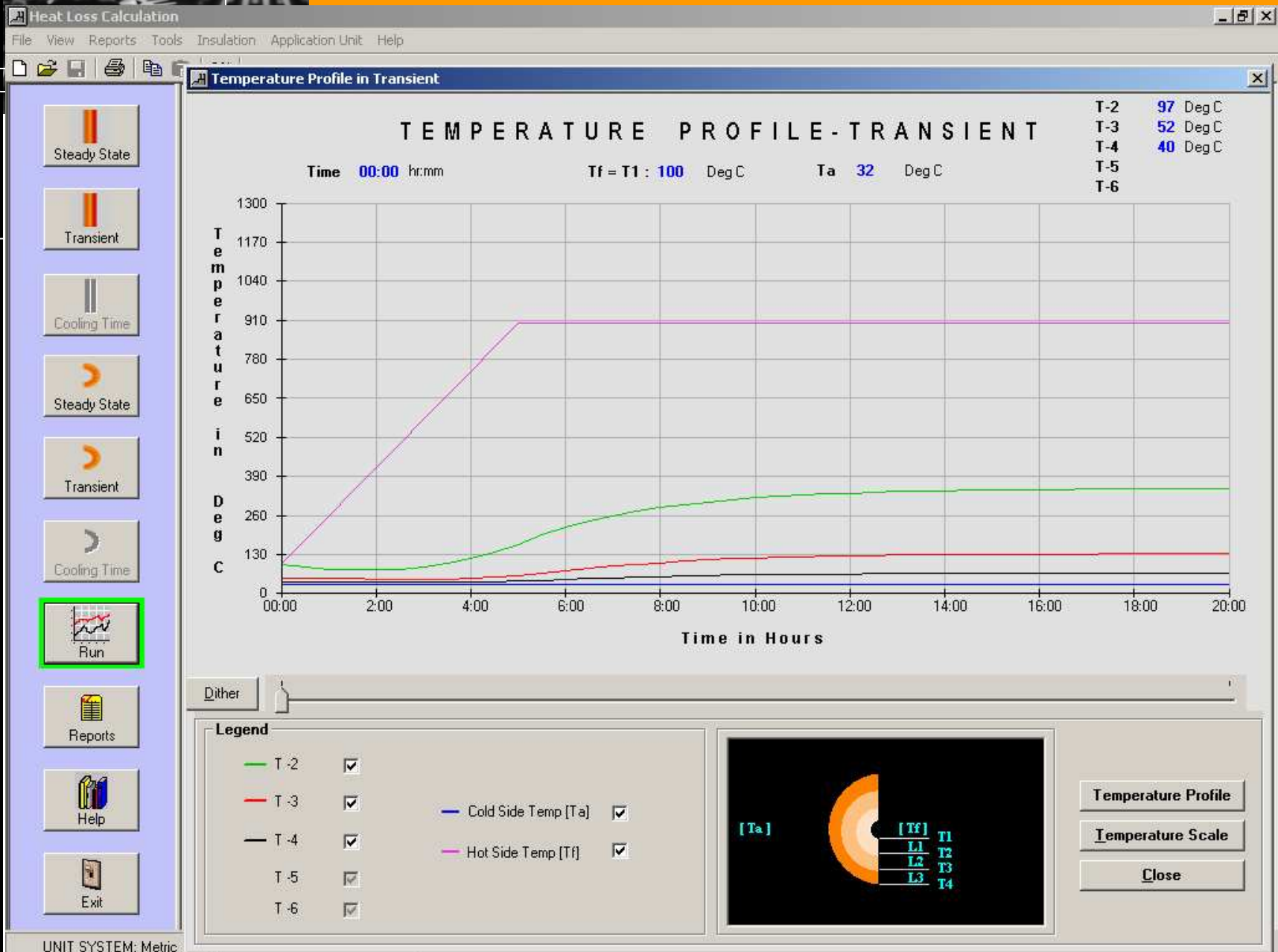
Configuration

Transient

Close Reset Save

UNIT SYSTEM: Metric

Transient Run – Curved Walls



Insulation Data Input and View

Heat Loss Calculation

File View Reports Tools Insulation Application Unit Help

Insulation Data

Name: Exelfrax 1800 Board

Density: 128.4 Kg/m³

Heat Capacity: 795.4 Watt-s/Kg-Deg C

Water Content: 0.0 %

Porosity: 60.0 %

Temperature Deg C	Conductivity Watt/ m -Deg C
25	0.019
250	0.0224
500	0.0273
750	0.0346
1000	0.0378
1250	0.0
1500	0.0

Conductivity Data with Watt/m-Deg C

FormXPRT is a desktop software that simplifies the job of SETTING UP and SIMULATING industrial furnaces. The software has been developed to aid process engineers and furnace operators configure their furnaces, select parts, and run what-if analysis to determine the best furnace operating parameters.

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UNIT SYSTEM: Metric TYPE: Insulation

Reset New Delete Ok Save Close