



Flotherm - 雙偵測點熱源(on/off)控制



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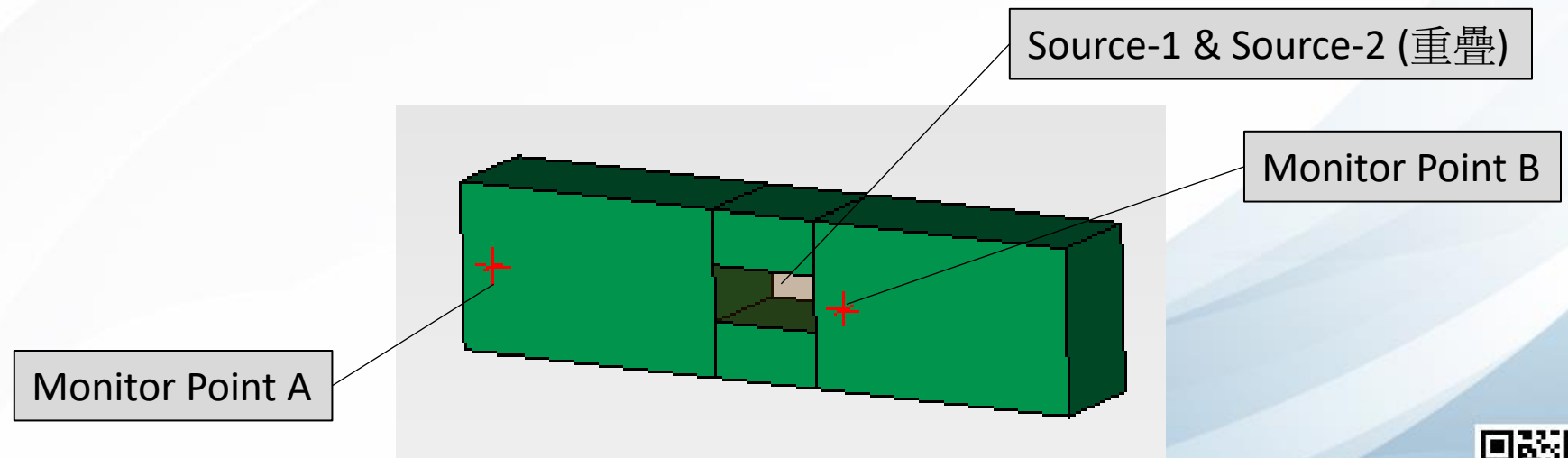
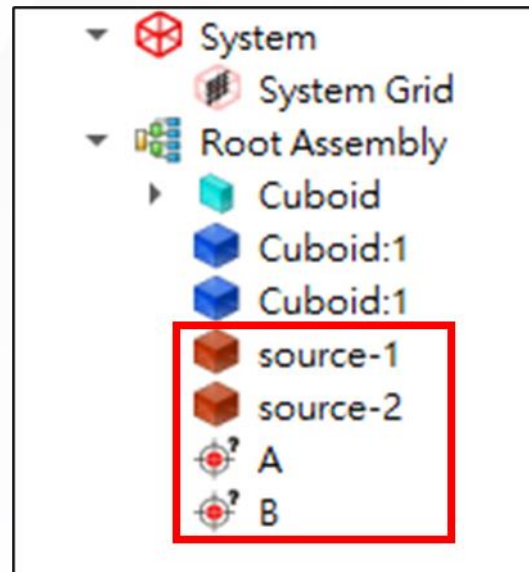


模擬目標

目標：模型中有兩個需要控制的溫度點(T_A, T_B)，目標為 $T_B < 40\text{ }^\circ\text{C}$ 、 $T_A > 20\text{ }^\circ\text{C}$

控制方法：當 $T_B > 40\text{ }^\circ\text{C}$ \rightarrow power off；當 $T_A < 20\text{ }^\circ\text{C}$ \rightarrow power on

※模擬會使用到2個source重疊以及兩個Monitor Point。

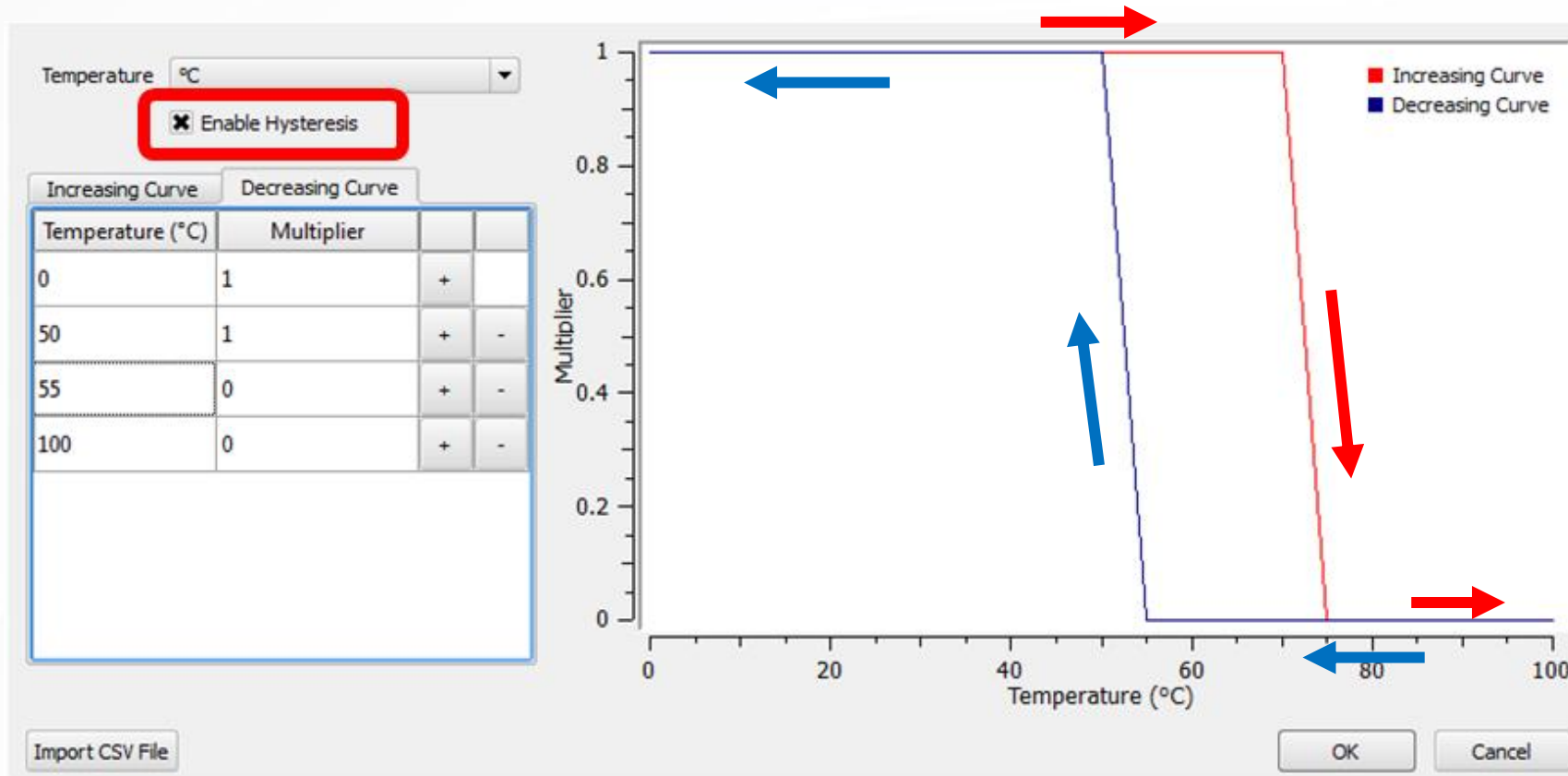


Increasing Curve & Decreasing Curve

Increasing Curve & Decreasing Curve分別代表升溫時的表現與降溫時的表現。

當物體溫度上升時，source則會參考Increasing Curve為隨溫度變化的瓦數。 →

當物體溫度下降時，source則會參考Decreasing Curve為隨溫度變化的瓦數。 ←



Source-1 定義

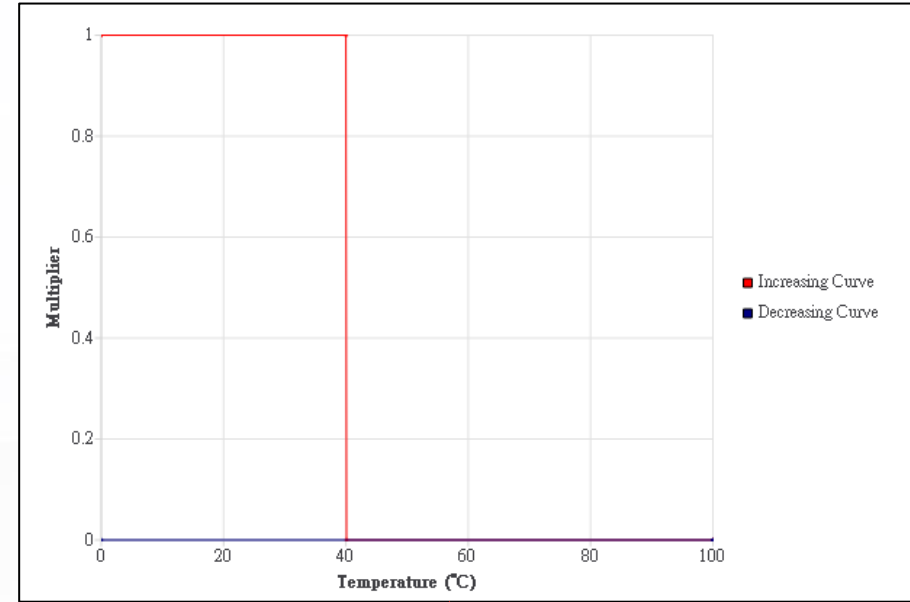
整體溫度有兩種狀態(Increasing & Decreasing)

升溫時(Increasing Curve;升溫向右，僅能走紅色曲線)：

- $T_B < 40\text{ }^\circ\text{C} \rightarrow$ power on (100W)
- $T_B > 40\text{ }^\circ\text{C} \rightarrow$ power off (0W)

降溫時(Decreasing Curve;升溫向左，僅能走深藍色曲線)：

- power off (0W)



The figure illustrates the configuration steps for Source-1 in the software:

- Source List:** A list of sources is shown, with 'power on' selected. The 'Source' dropdown in the bottom right is highlighted with a red box.
- Attribute Data:** The 'power on' source is selected, showing its properties: Name (power on), Source Type (Temperature), Activate (checked), Option (Total Source), Total Source (100 W), and Transient Attribute (on). The 'Total Source' field is highlighted with a red box.
- Multiplier vs. Temperature:** The 'Multiplier vs. Temperature' chart is configured. The Name is 'on', Activate is checked, and the Associate Monitor Point is set to 'B'. The 'Click To Edit' button for the chart is highlighted with a red box. A red arrow points from this button to the graph above.



Source-2定義

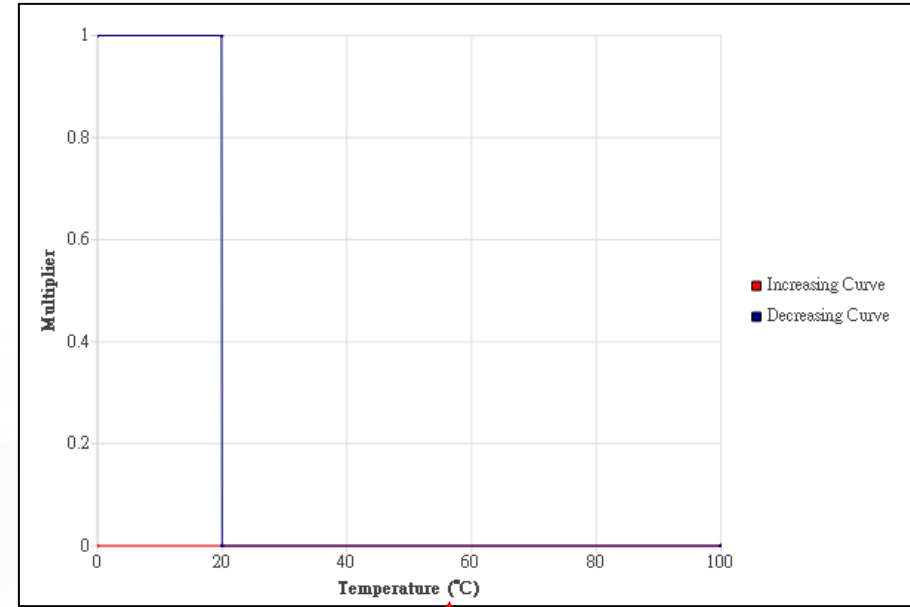
整體溫度有兩種狀態(Increasing & Decreasing)

升溫時(Increasing Curve ;升溫向右，僅能走紅色曲線)：

- power off (0W)

降溫時(Decreasing Curve;升溫向左，僅能走深藍色曲線)：

- $T_A > 20\text{ }^\circ\text{C} \rightarrow$ power off (0W)
- $T_A < 20\text{ }^\circ\text{C} \rightarrow$ power on (100W)

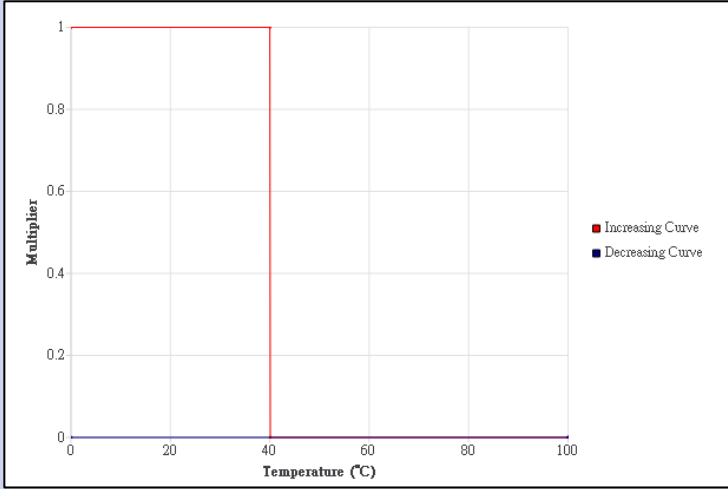
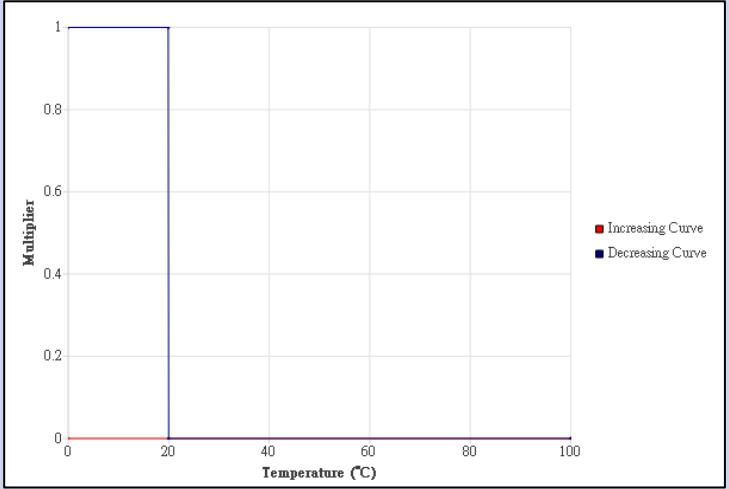


The interface shows the configuration for 'source-2'. The 'power off' configuration is selected, with 'Source Type' set to 'Temperature' and 'Total Source' set to '100 W'. The 'Multiplier vs. Temperature' chart is also configured, with 'Name' set to 'off' and 'Associate Monitor Point' set to 'A'. A red arrow points from the 'Multiplier vs. Temperature' chart to the graph above.



總整理

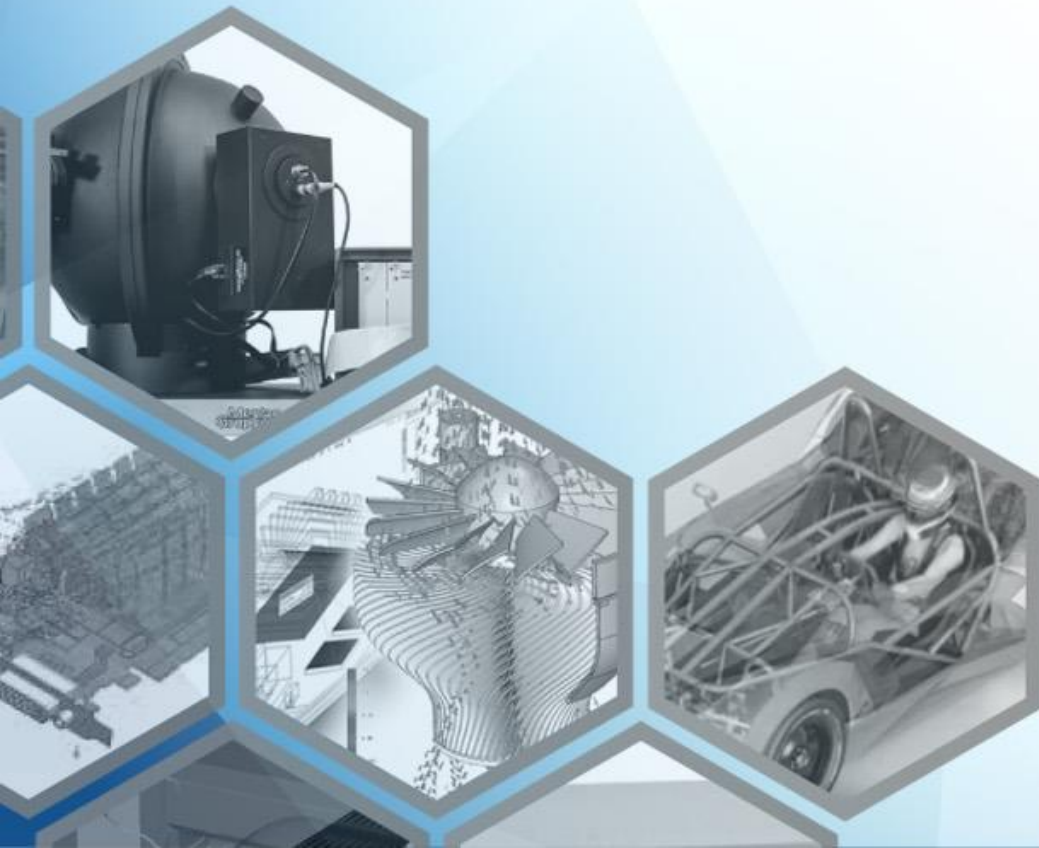
利用兩個Source smart part代表熱源，分別於升溫與降溫的狀況下放熱。

	Source-1	Source-2
升溫(ΔT 為正值)	<ul style="list-style-type: none"> $T_B < 40^\circ\text{C}$，放熱(100W) $T_B > 40^\circ\text{C}$，不放熱(0W) 	<ul style="list-style-type: none"> 不放熱(0W)
降溫(ΔT 為負值)	<ul style="list-style-type: none"> 不放熱(0W) 	<ul style="list-style-type: none"> $T_A < 20^\circ\text{C}$，放熱(100W) $T_A > 20^\circ\text{C}$，不放熱(0W)
		



The End

謝 謝



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