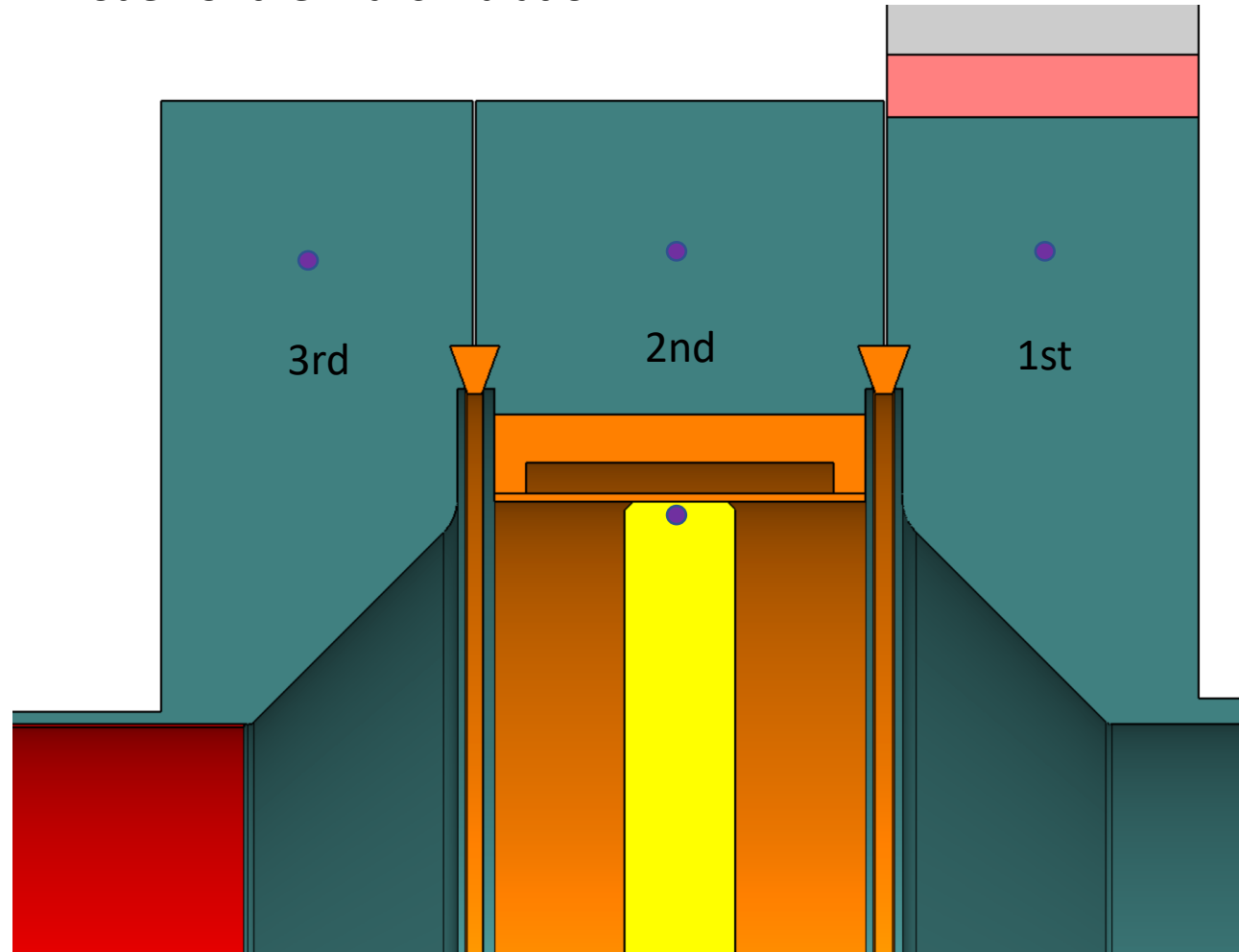
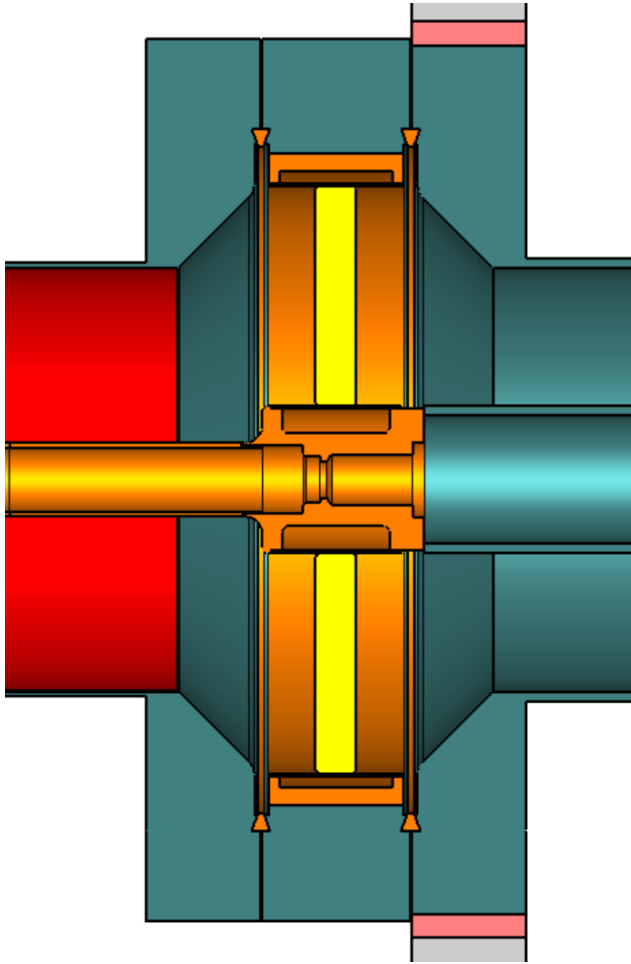


**In the wake of last coupler meeting:
thermal contact between SS flanges,
temperature distributions and gradients.**

S. Kazakov

05/21/2020

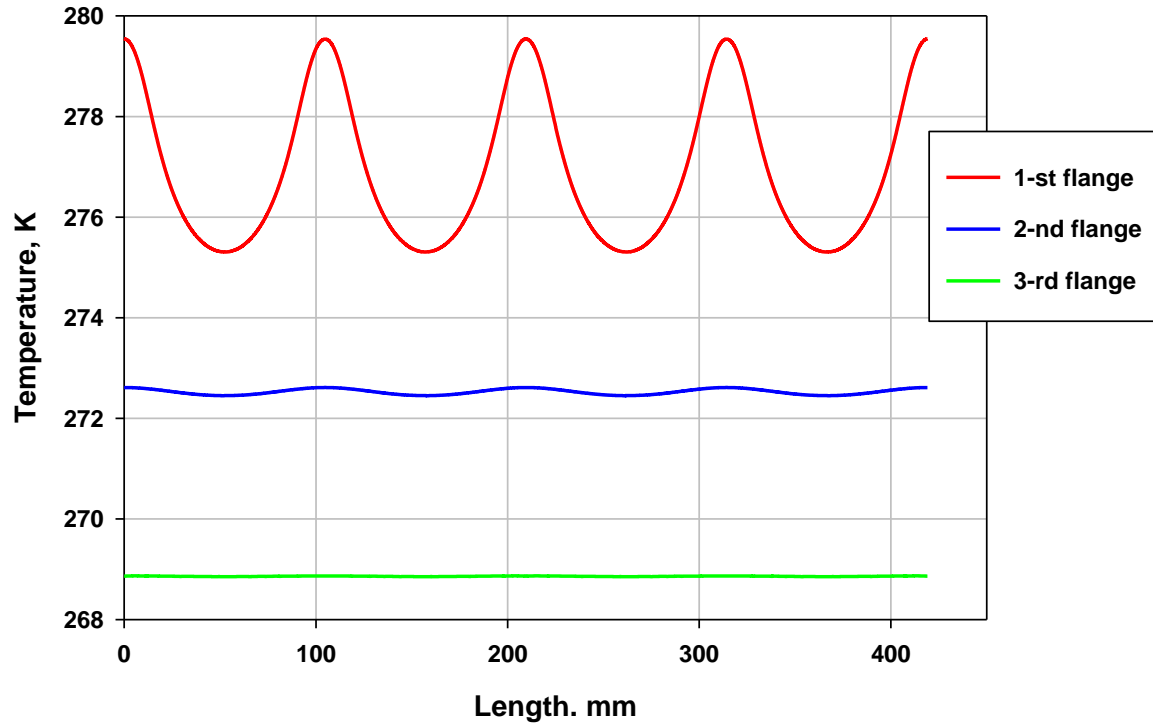
Configuration of window model for thermal simulation



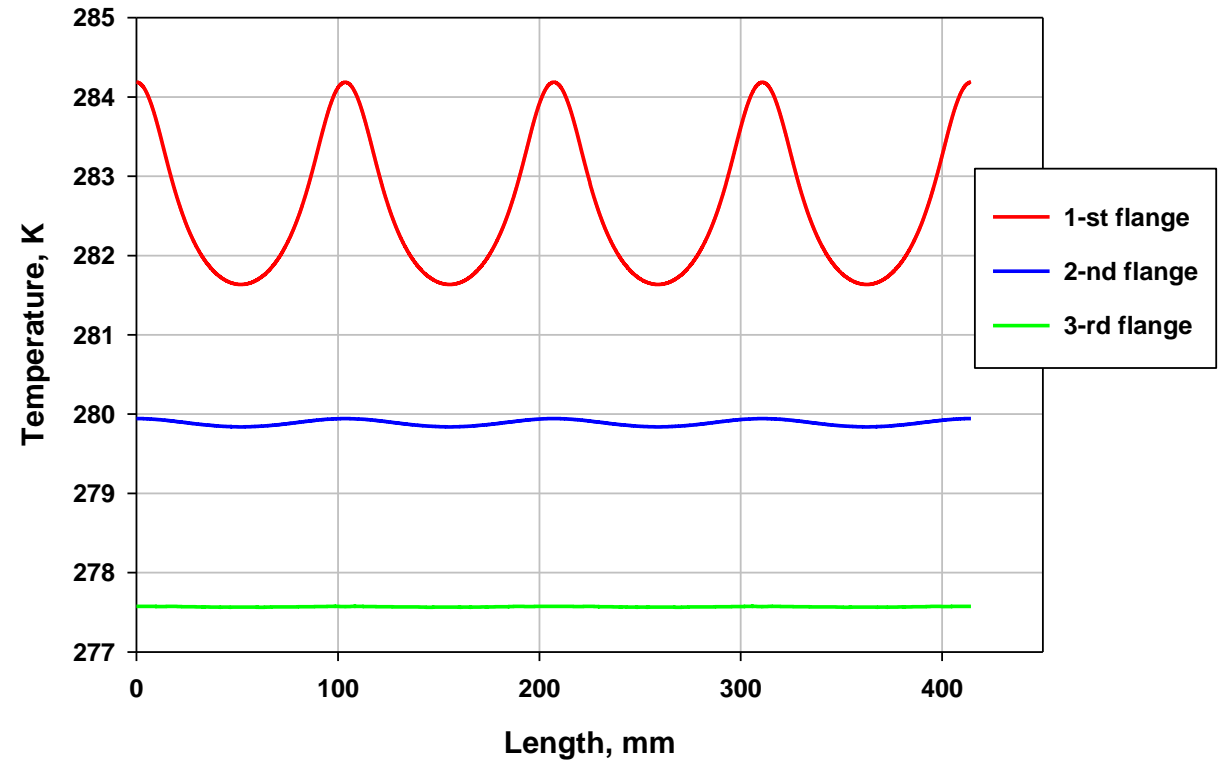
● - Position of circle curves for temperature outputs

SS flanges have thermal contacts only through parts ($\sim 1/4$) of copper gaskets.
Model, probably, **underestimates** thermal contact between SS flanges.
This model was used in all simulations presented before.

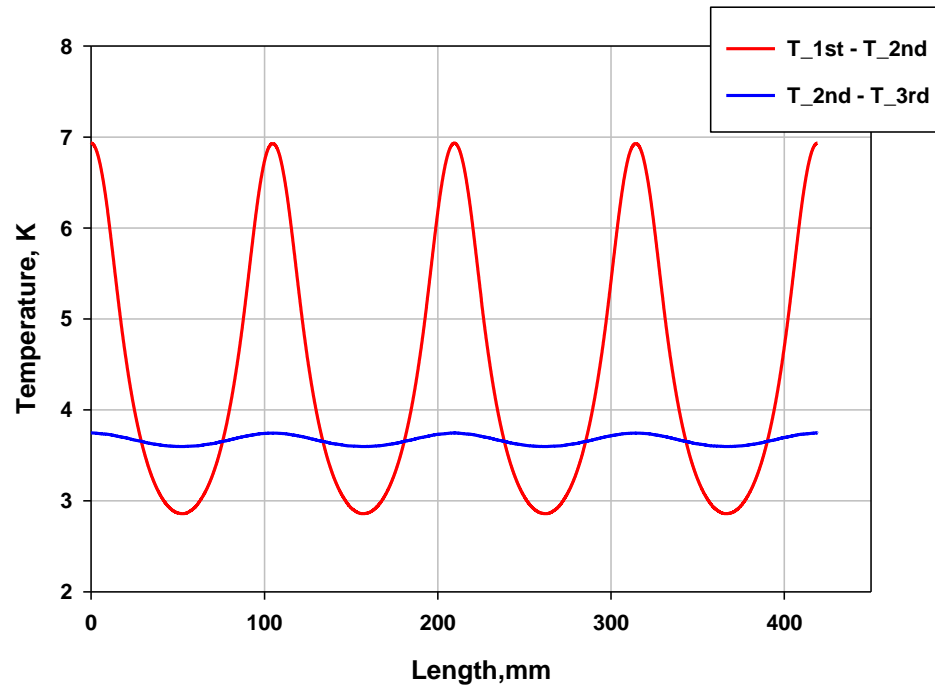
1.65mm, 4 x 2" double straps,
temperatures of flanges.



0.8mm, 4 x 2" double straps,
temperatures of flanges.

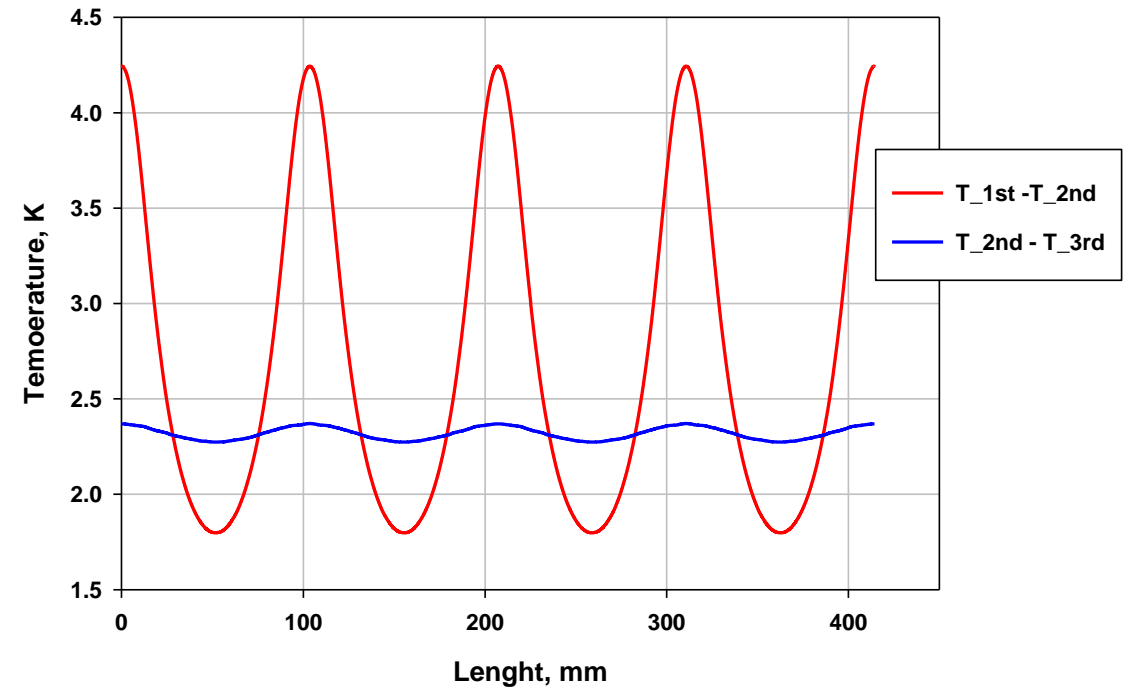


1.65mm, 4 x 2" double straps,
temperature differences.



Temperature differences between flanges:
~ 5K, (T1-T2)
~ 3.7K, (T2-T3)

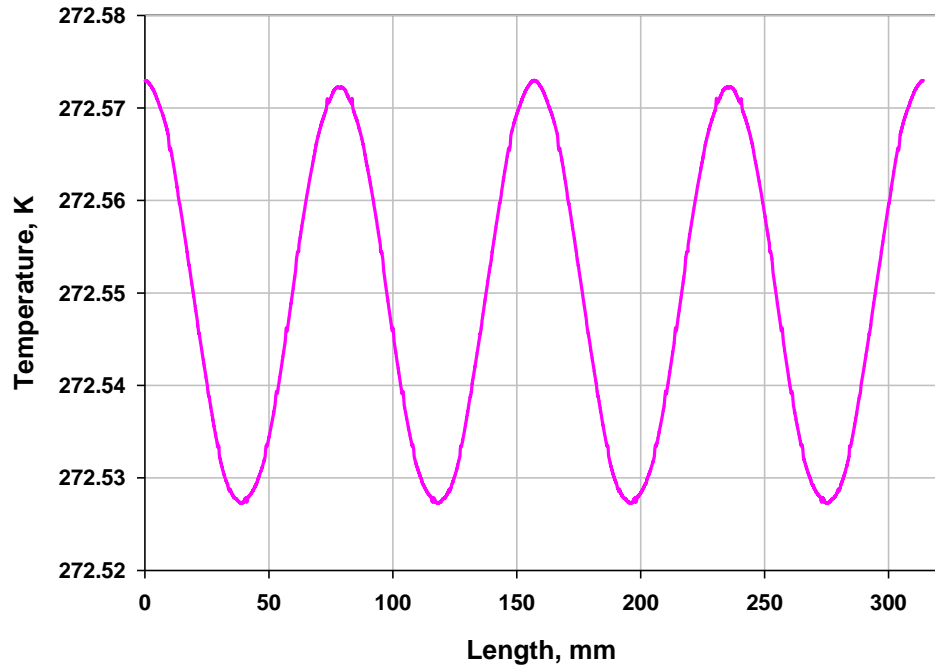
0.8mm, 4 x 2" double straps,
temperatute differences



Temperature differences between flanges:
~ 3K, (T1-T2)
~ 2.7K, (T2-T3)

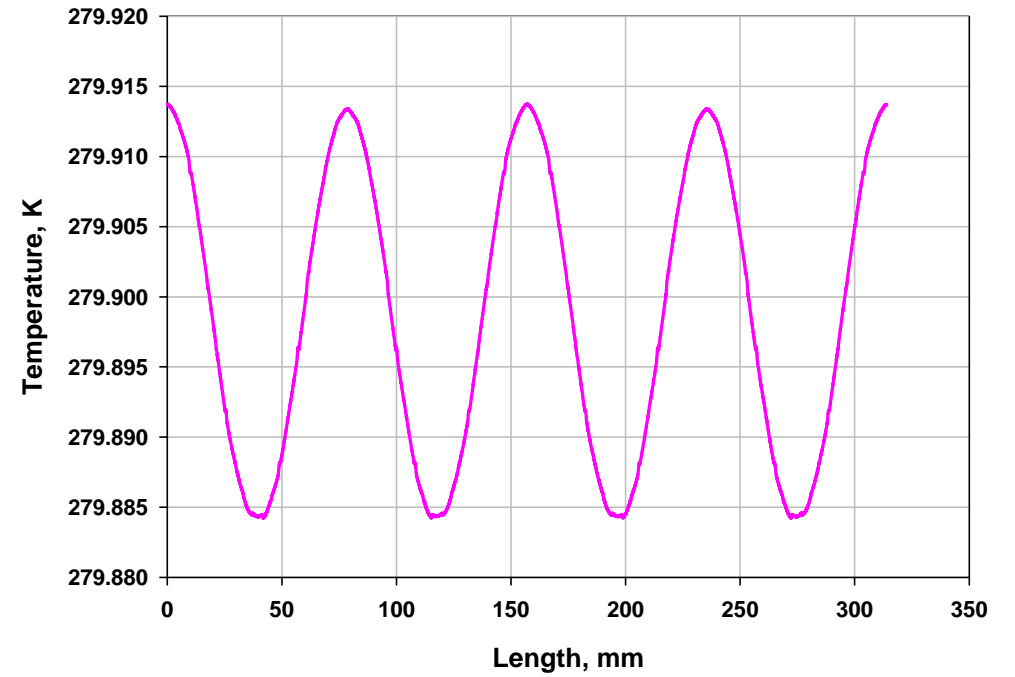
Model underestimate thermal contact between flanges.
It is expected that real temperature differences will be less.

**1.65mm, 4 x 2" double straps,
temperature at ceramic edge.**



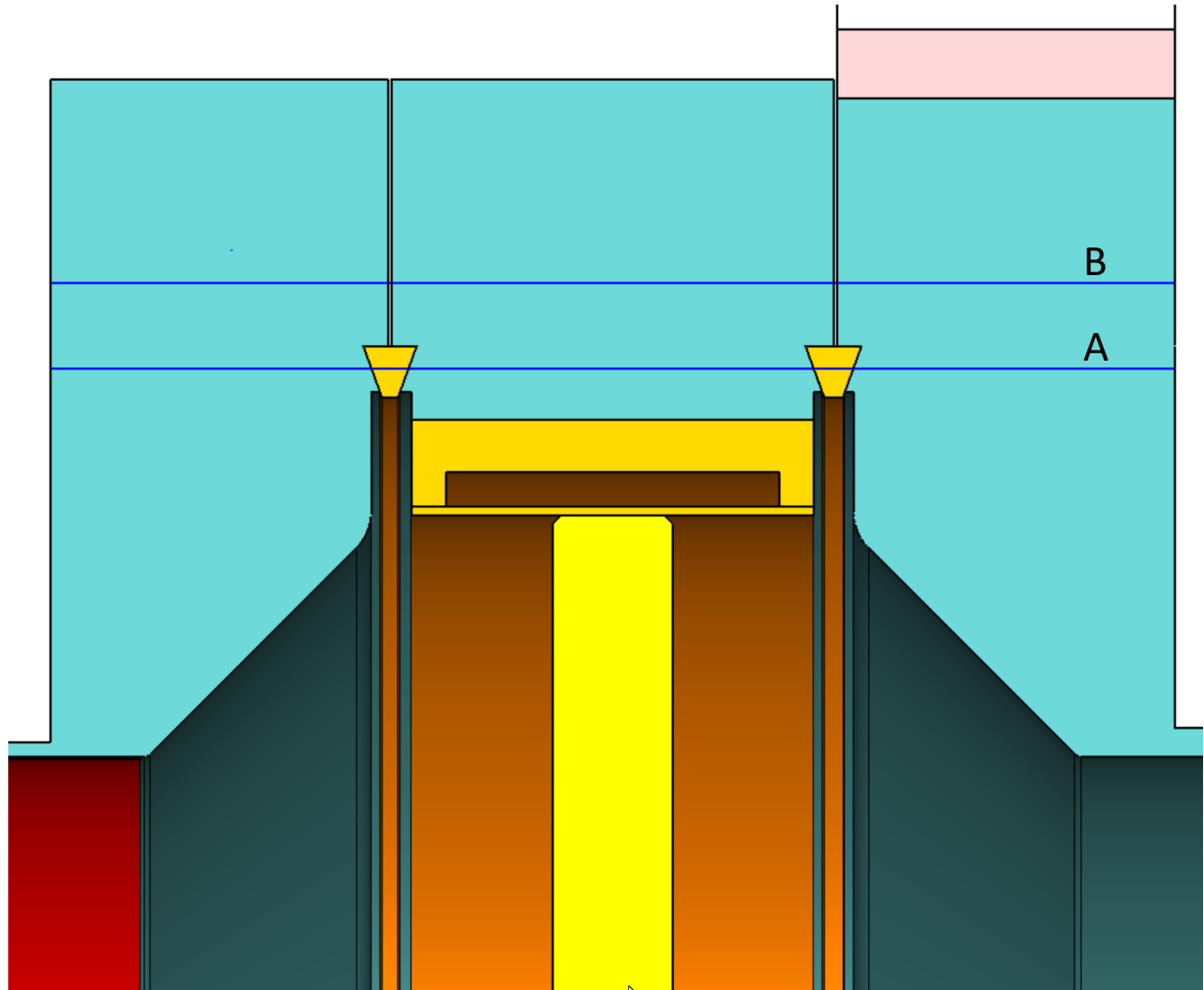
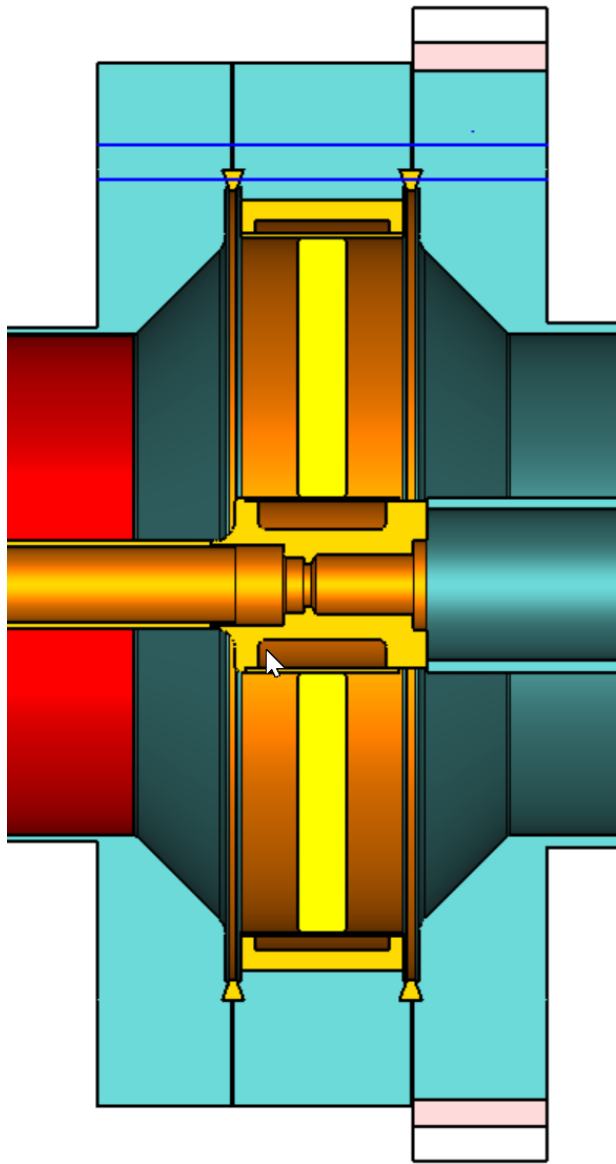
Temperature variation $\sim 0.05\text{K}$

**0.8mm, 4 x 2" double straps,
temperature at ceramic edge.**

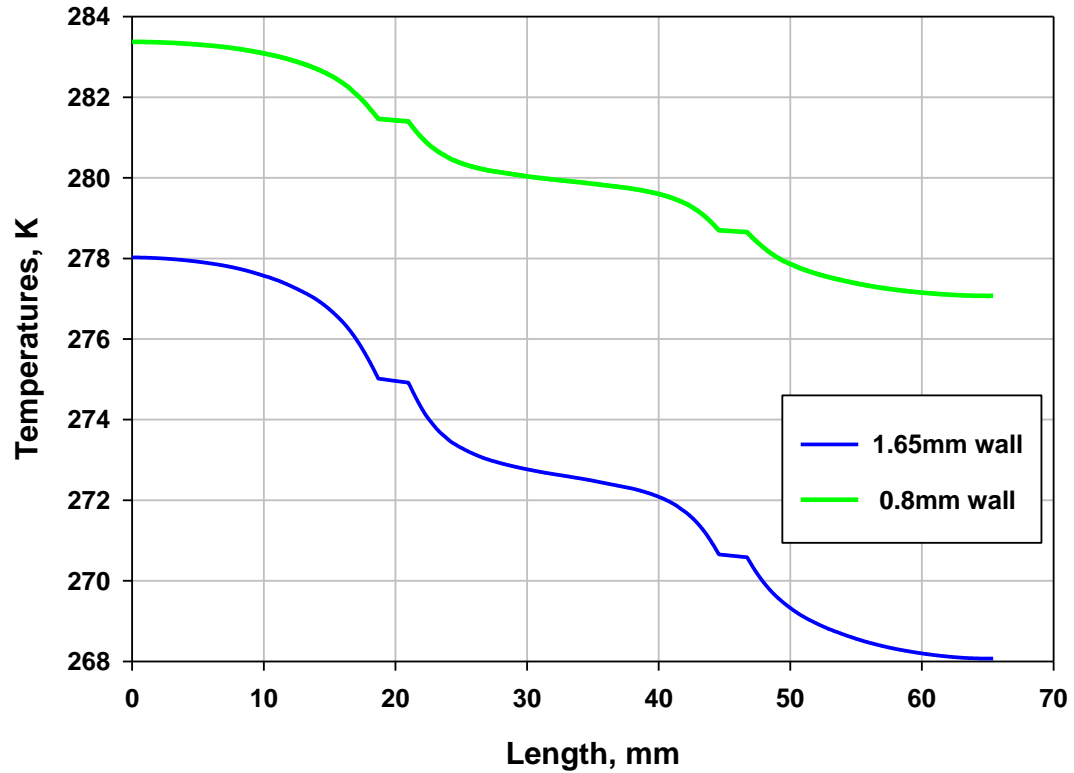


Temperature variation $\sim 0.03\text{K}$

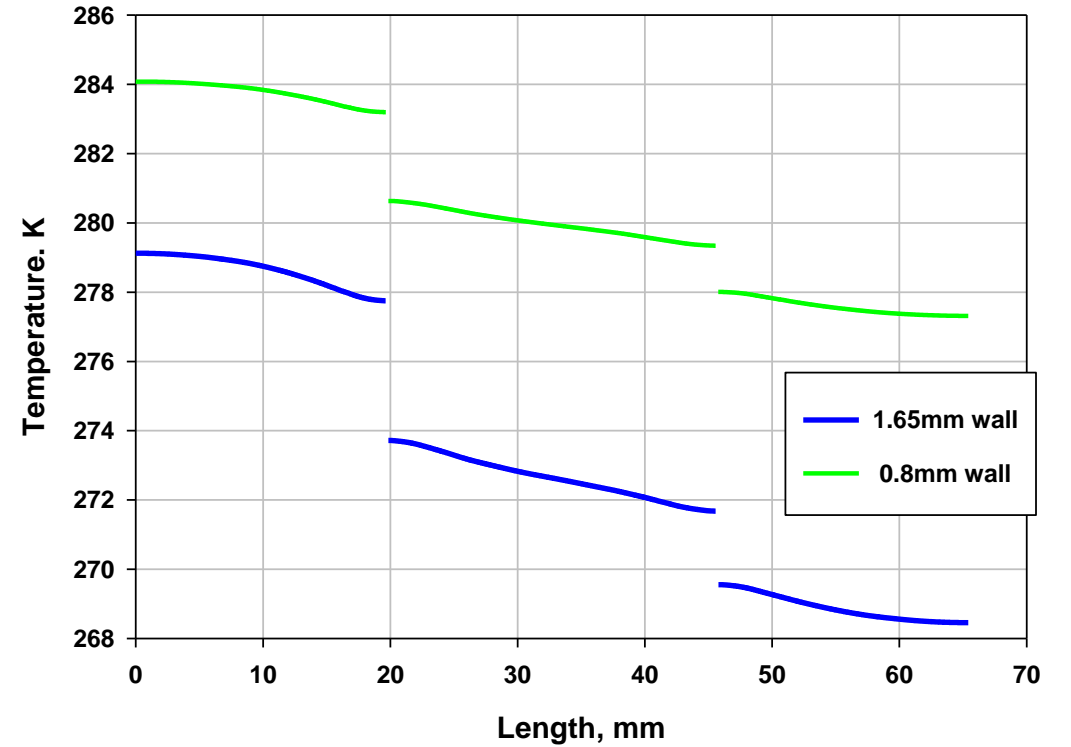
Variations are very small.



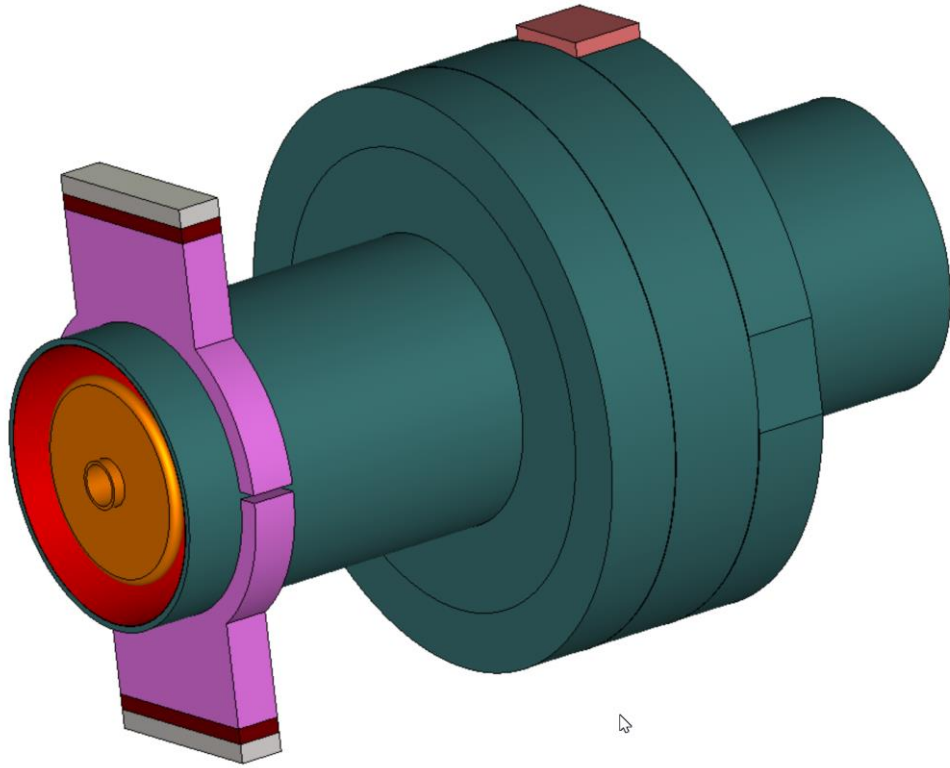
**Temperatures along line A,
4 x 2inch straps.**



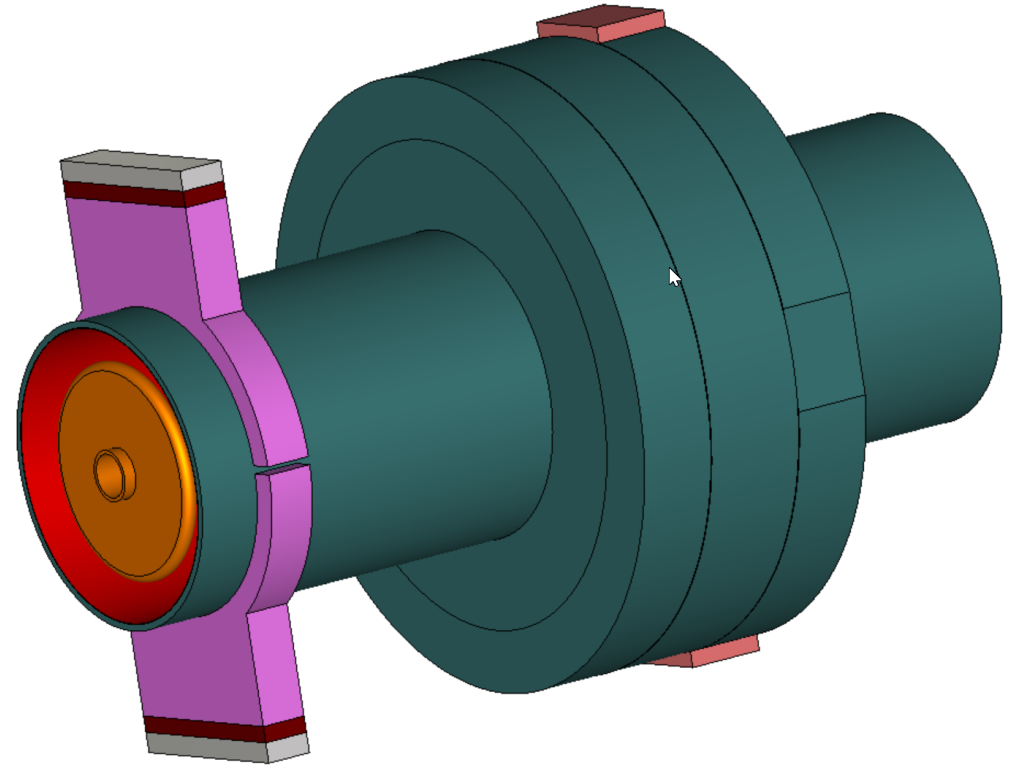
**Temperatures along line B,
4 x 2inch straps.**



Simulations of heaters (no air, no RF, no convection).

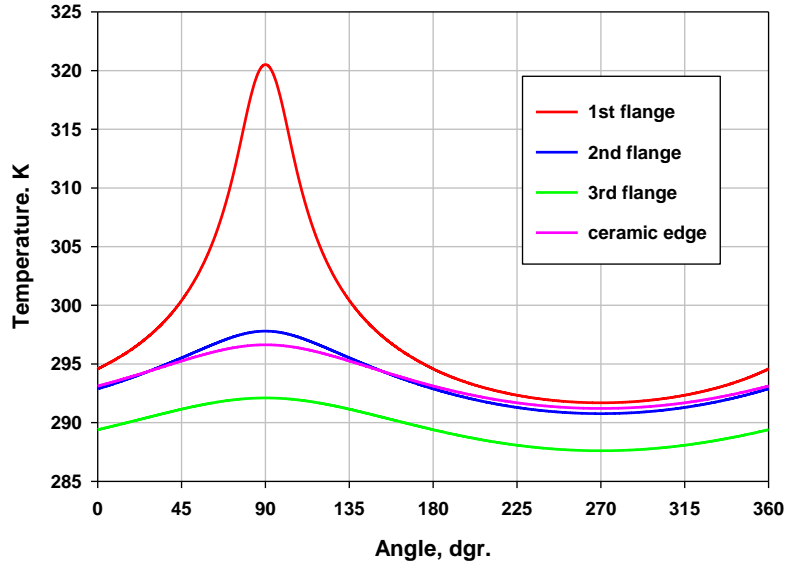


Only one heater.



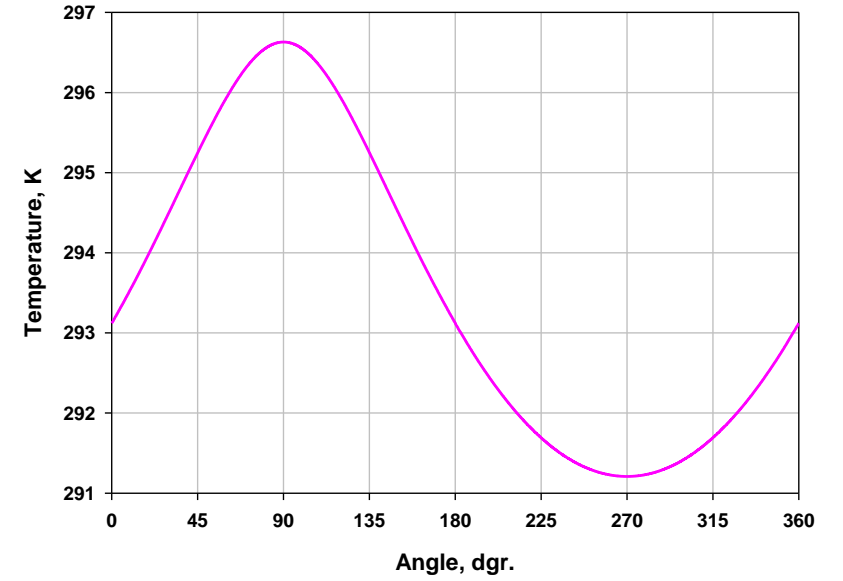
Two heaters.

1.65mm, one heater 16.5W,
temperature distributions.

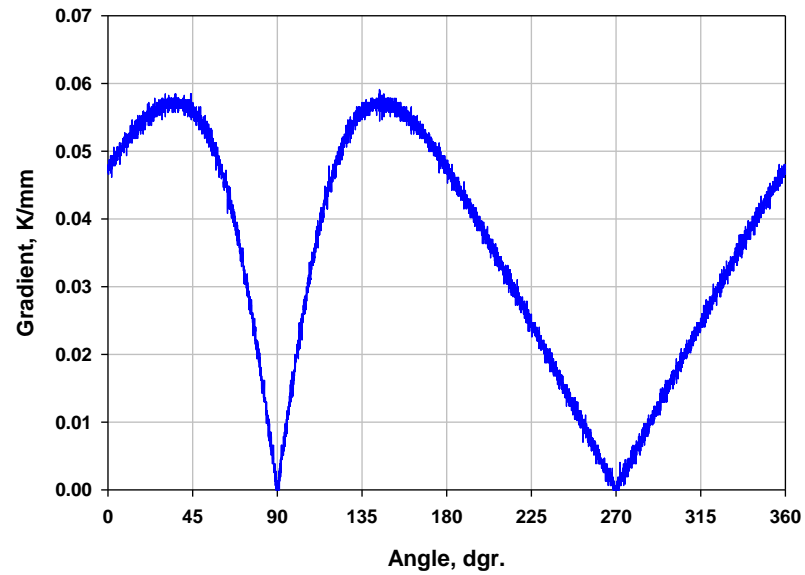


1.65mm, one heater 16.5W

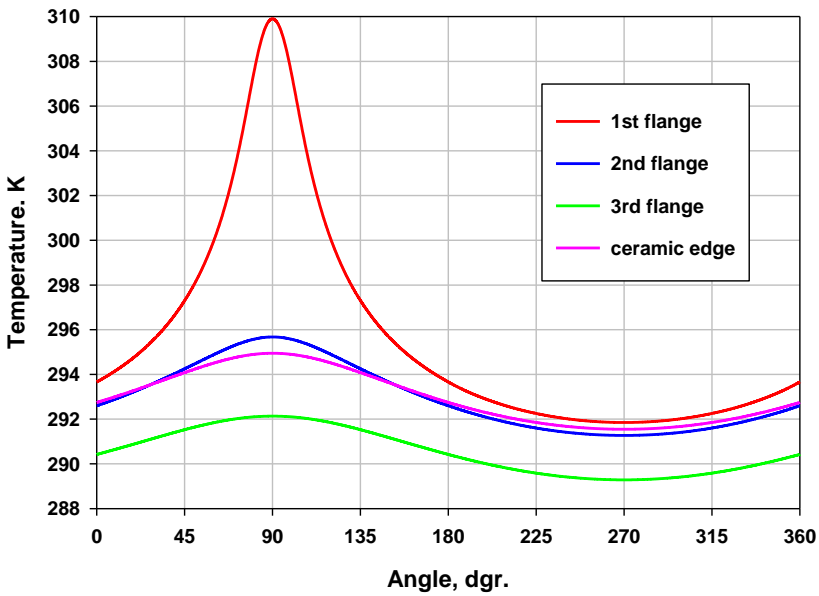
1.65mm, one heater 16.5W,
temperature along ceramic edge.



1.65mm, one heater 16.5W,
temperature gradient at ceramic edge, K/mm.

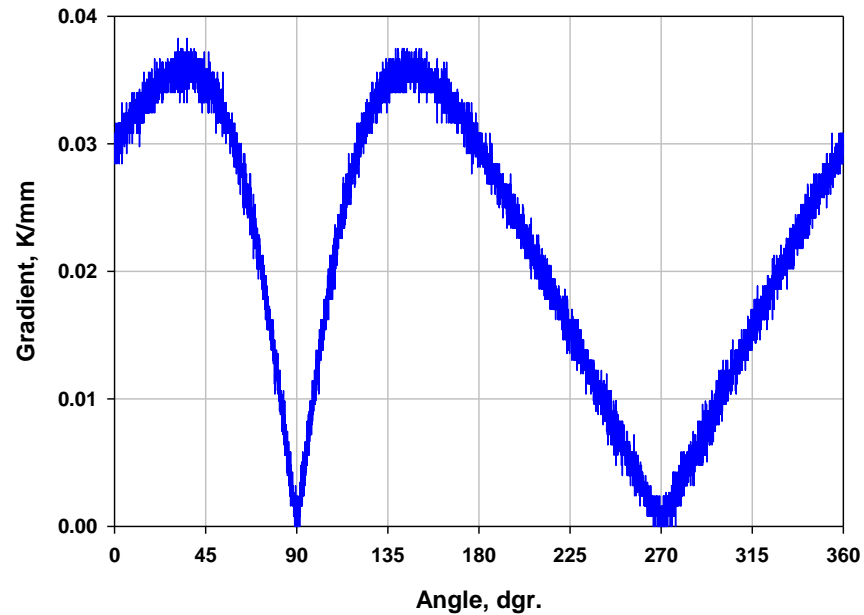


0.8mm, one heater 10.3W,
temperature distributions.

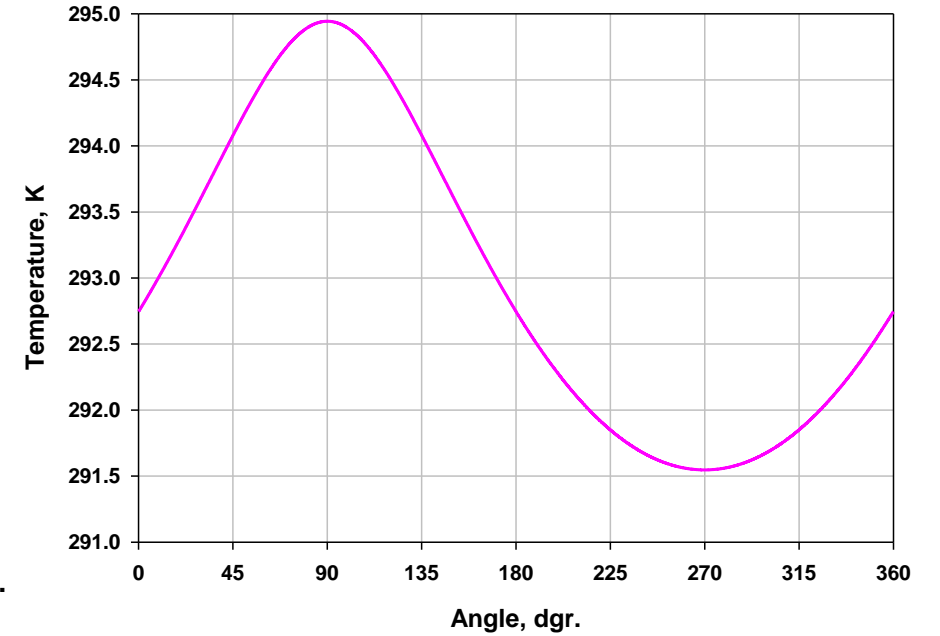


0.8mm, one heater 10.3W

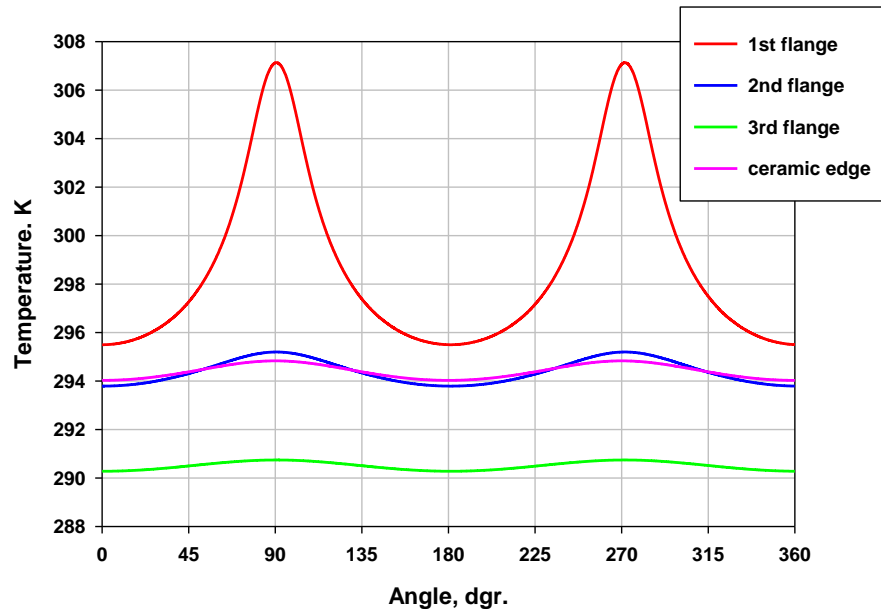
0.8mm, one heater 10.3W,
temperature gradient at ceramic edge, K/mm.



0.8mm, one heater 10.3W,
temperature along ceramic edge.

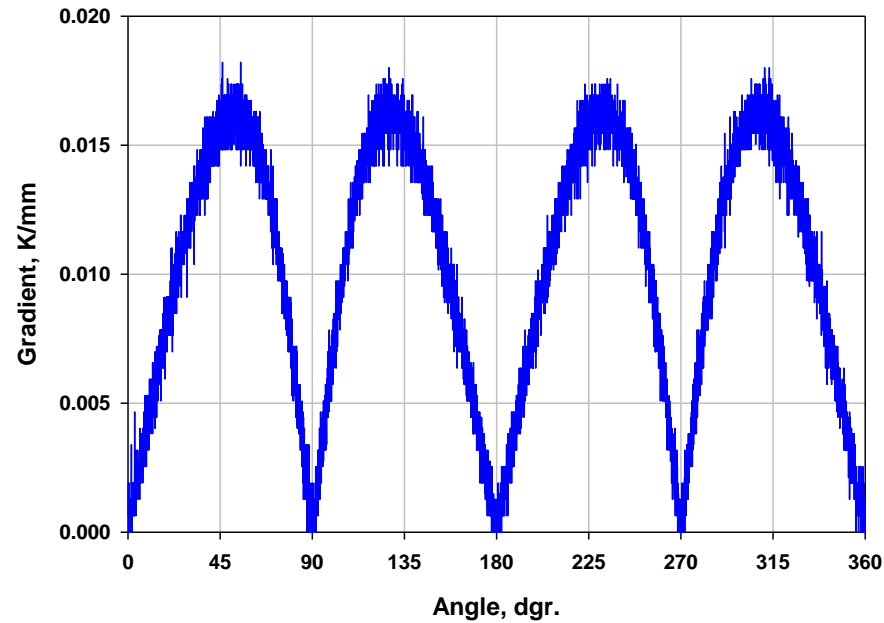


1.65mm, two heater x 8.3W,
temperature distributions.

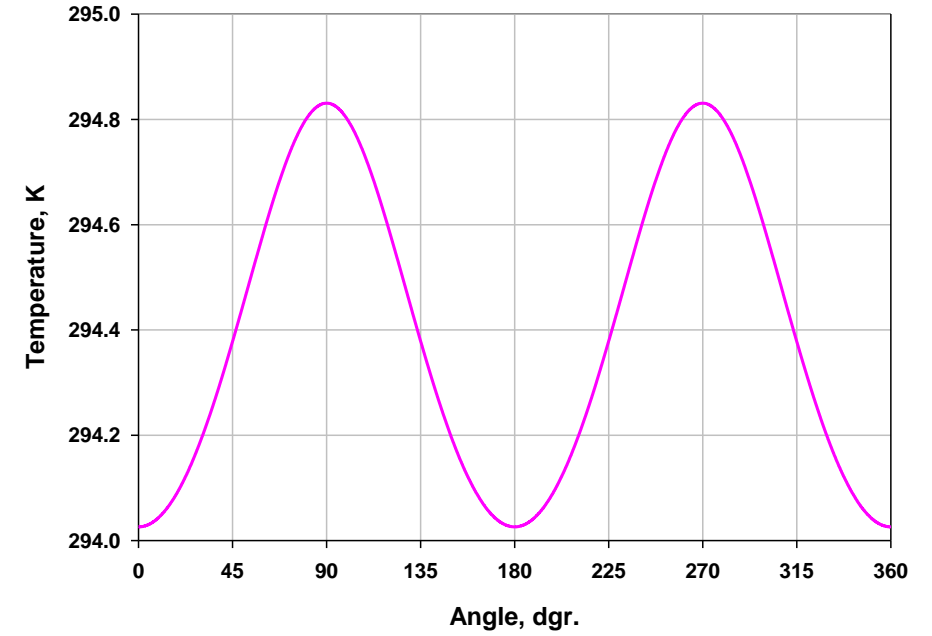


1.65mm, two heater x 8.3W

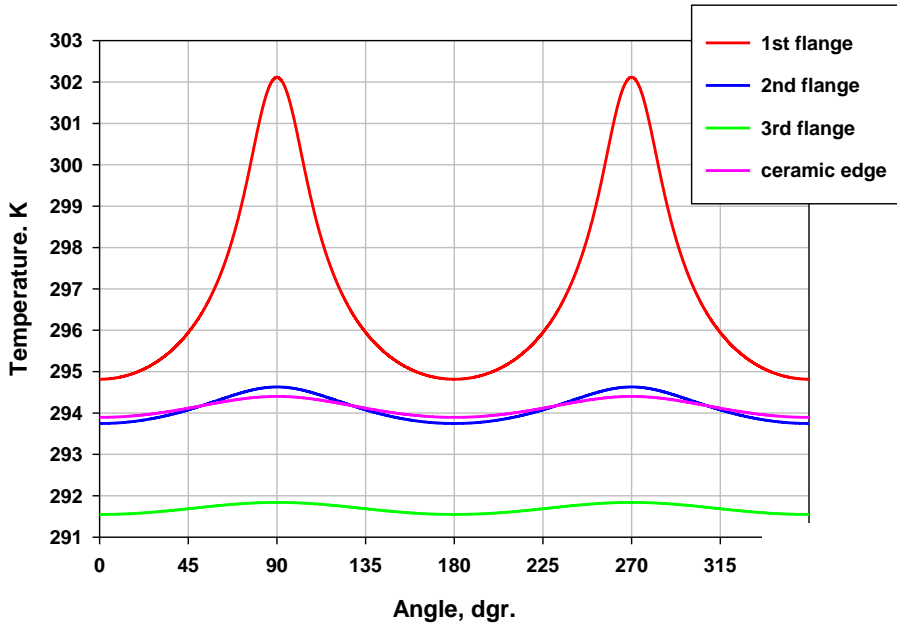
1.65mm, two heater 8.3W,
temperature gradient at ceramic edge, K/mm.



1.65mm, two heater x 8.3W,
temperature along ceramic edge.

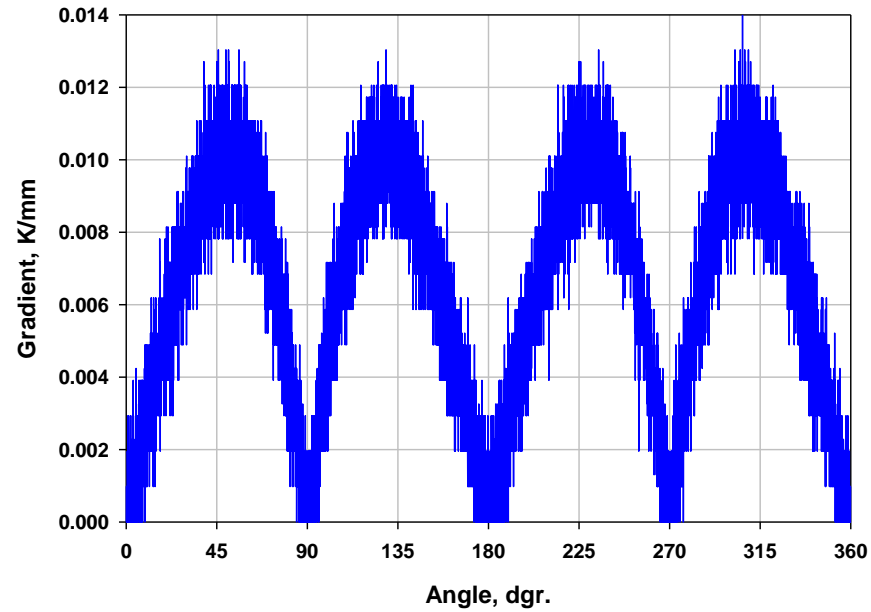


0.8mm, two heater x 5.2W,
temperature distributions.

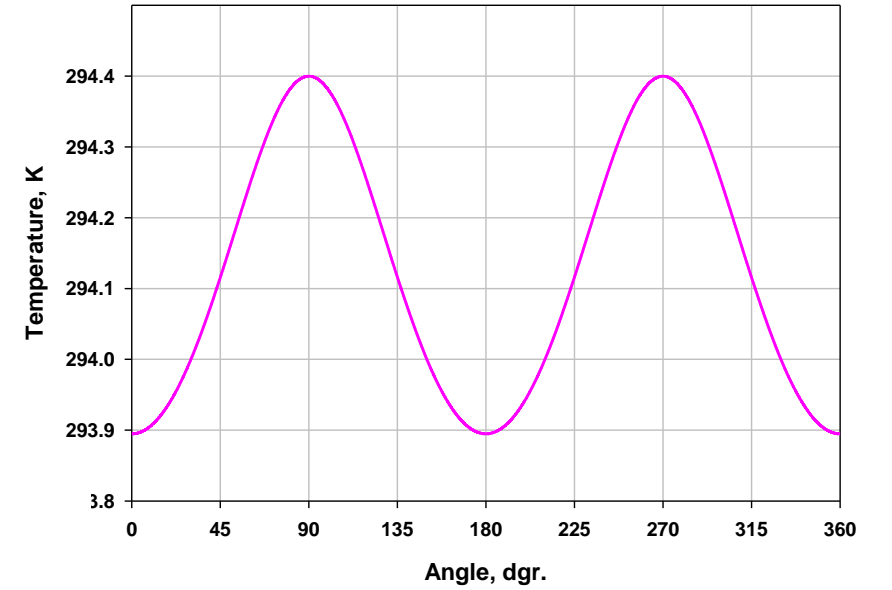


0.8mm, two heater x 5.2W

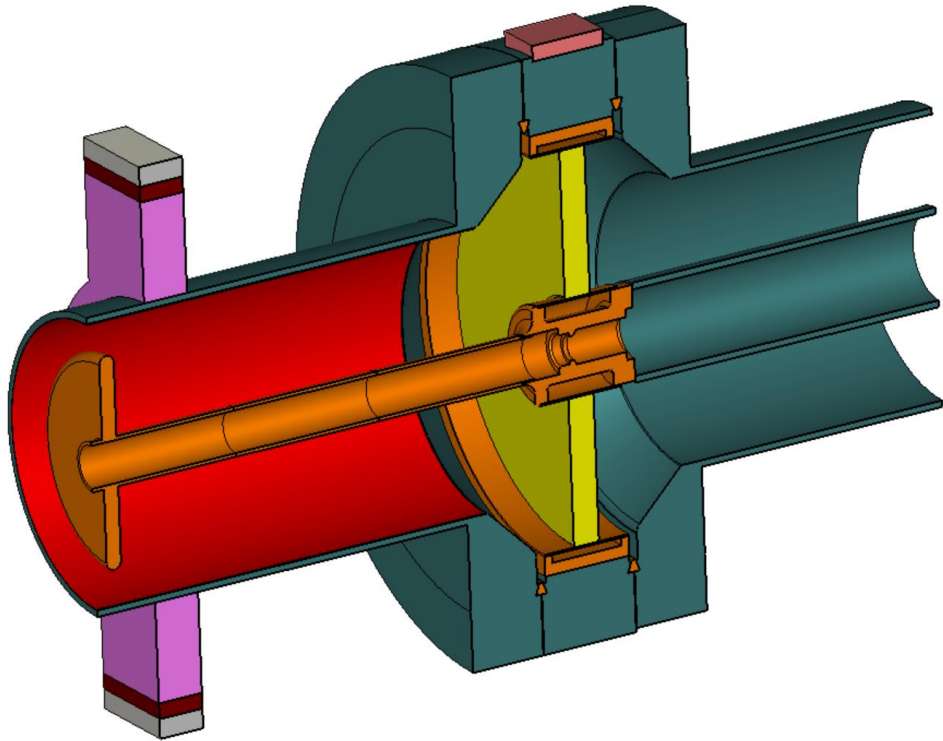
0.8mm, two heater x 5.2W,
temperature gradient at ceramic edge, K/mm.



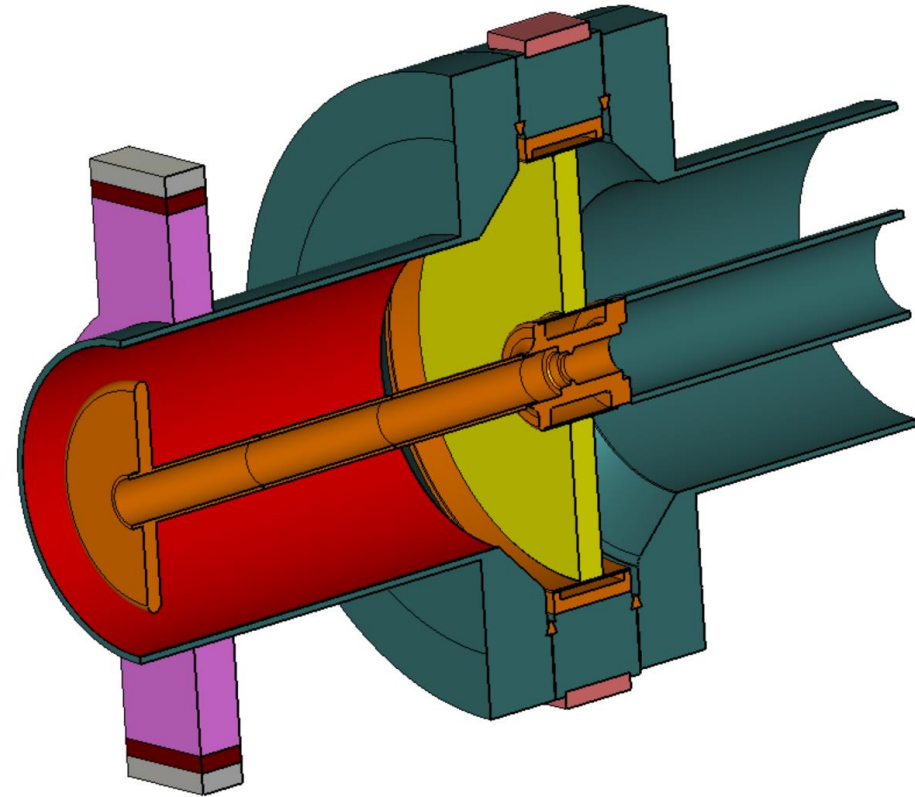
0.8mm, two heater x 5.2W,
temperature along ceramic edge.



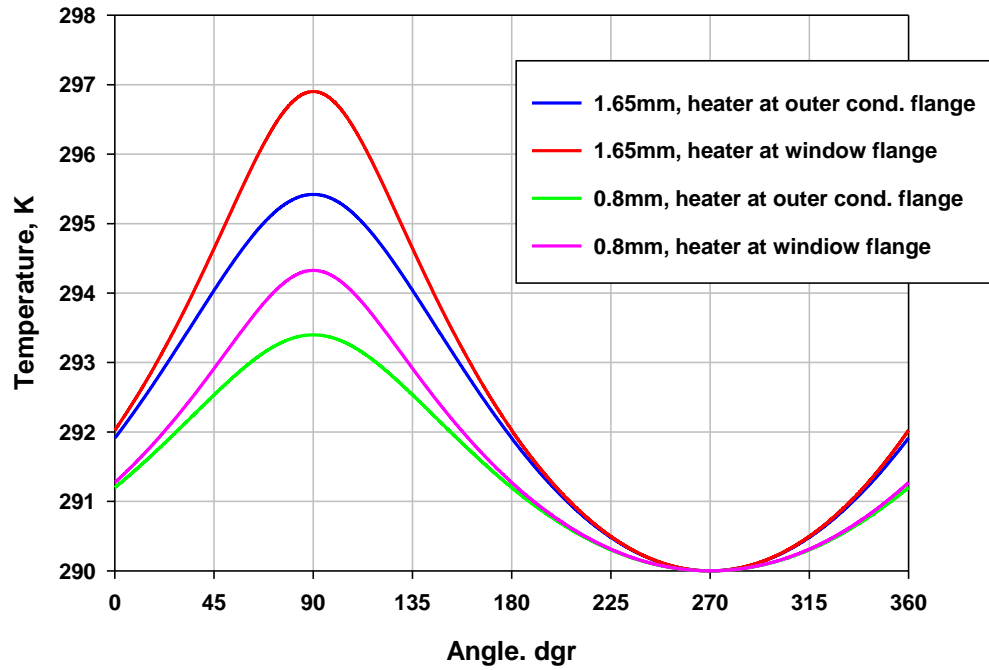
One heater at window flange



Two heater at window flange



Temperature at ceramic edge.



Temperature at ceramic edge.

