

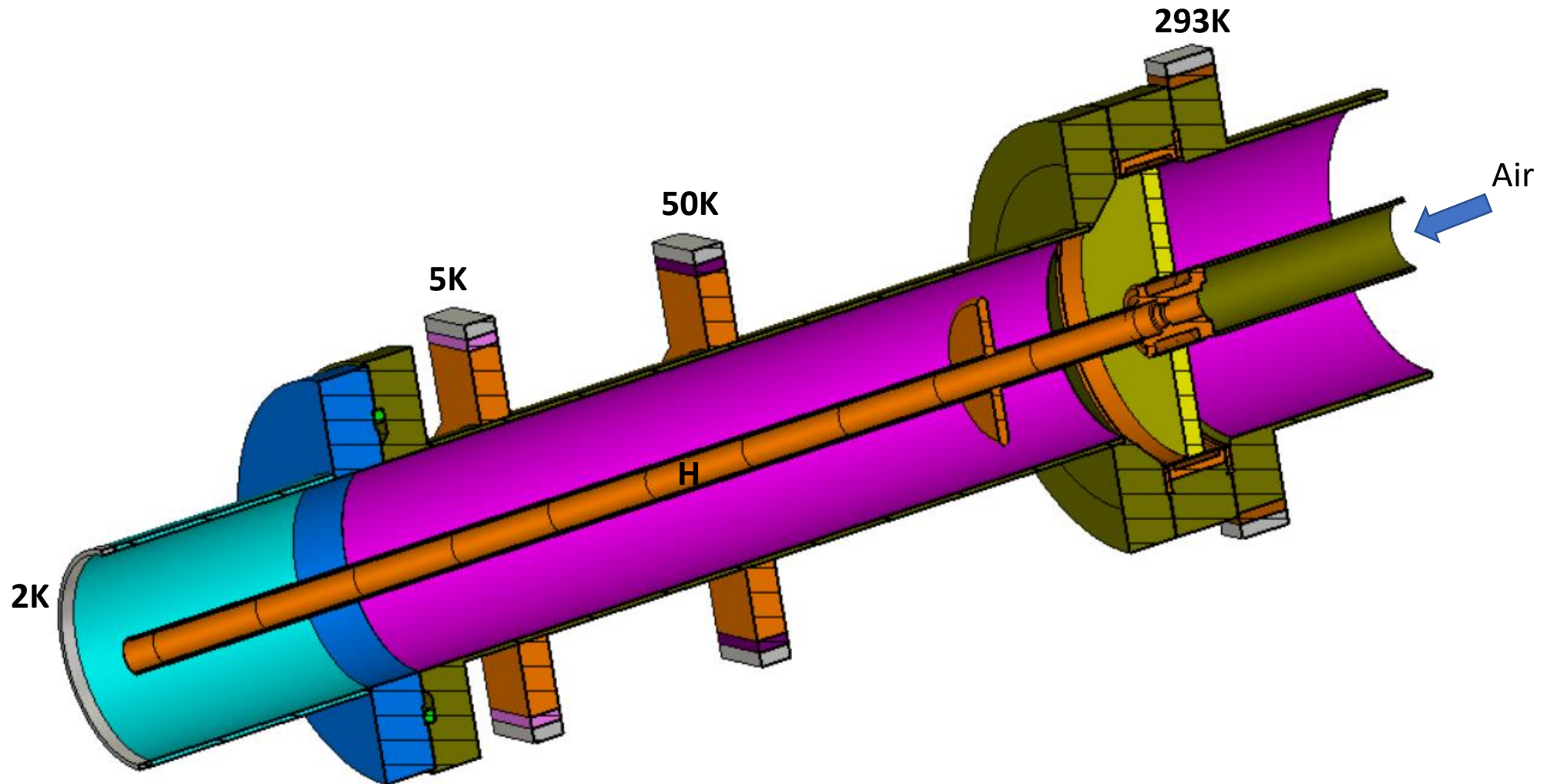
# **Conditioning of 650 MHz coupler at 35kW and 18kW.**

**S. Kazakov**

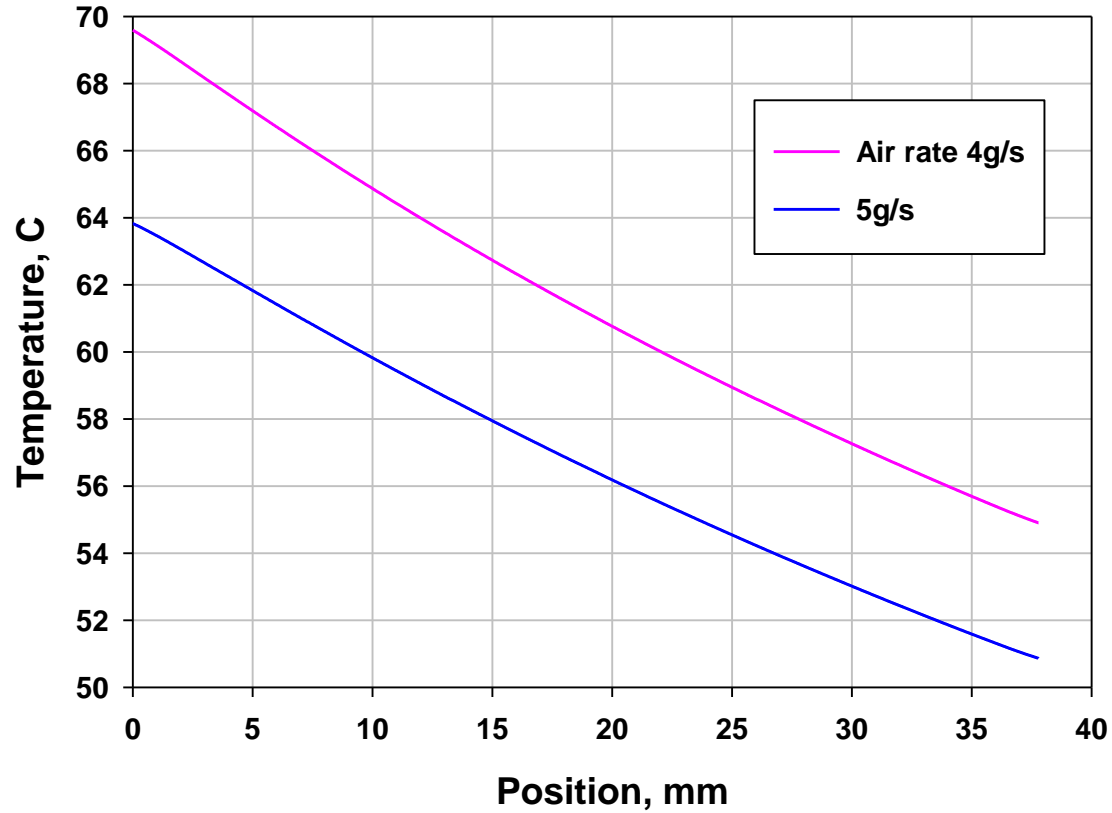
**04/13/2021**

# Cold configuration

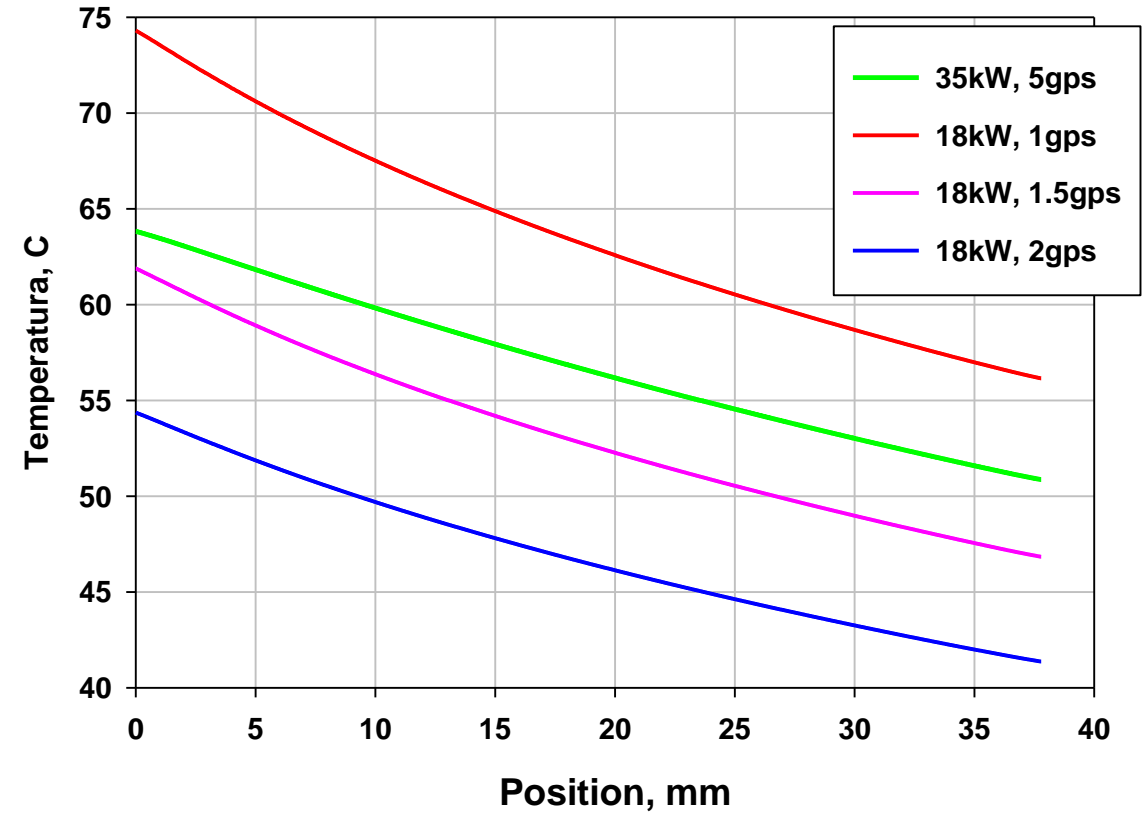
Air rate, g/s	1	1.5	2	3	4	5	6	7	8
H, W/K/m2	65	90	120	150	200	230	250	270	290



**Temperature along ceramics,  
cold configuration, 35 kW, full reflection.**

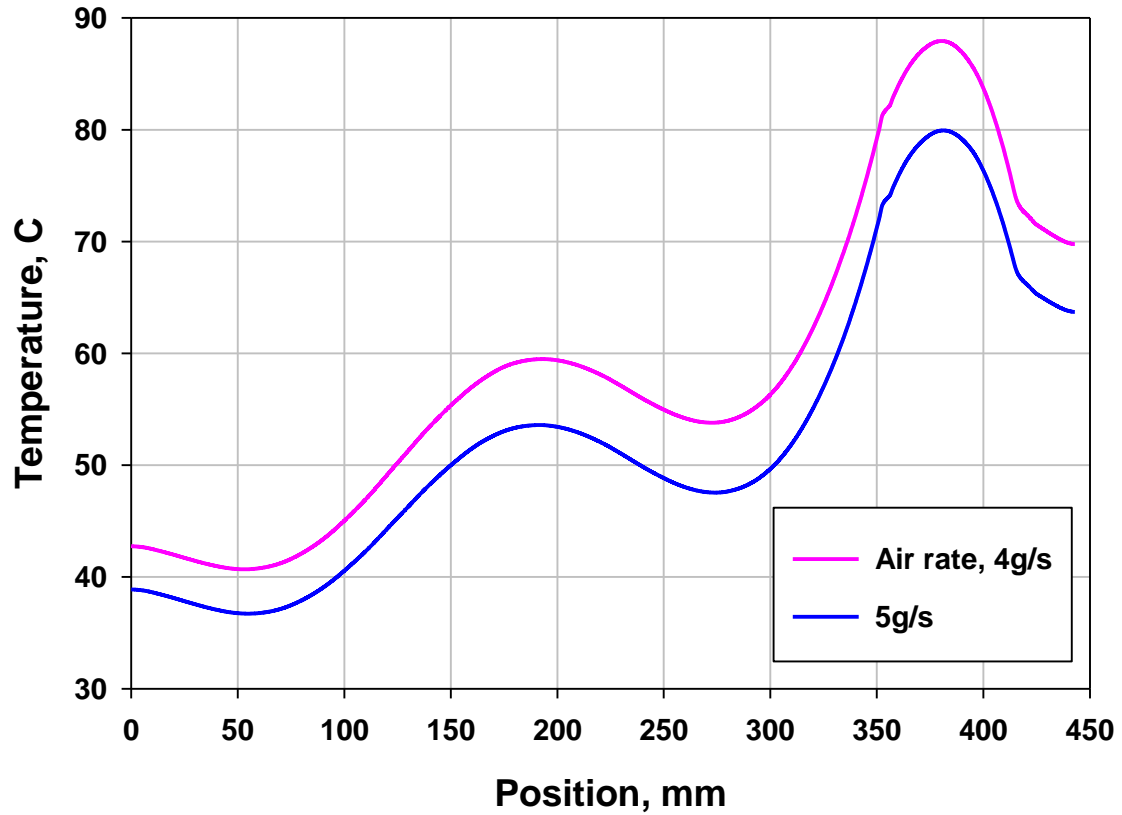


**Temperature along ceramics,  
cold configuration, full reflection.**

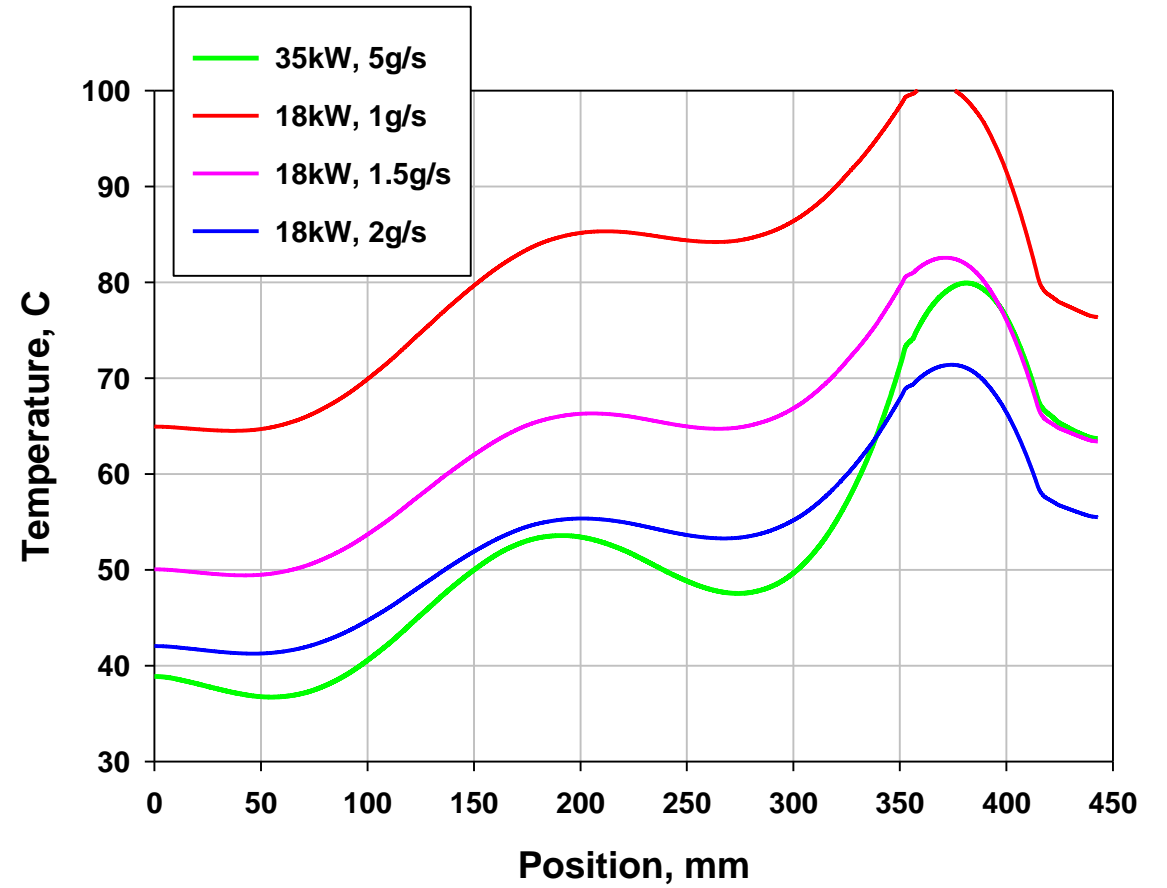


Recommended operating temperature at outer radius of window is < 60C ( 55C interlock limit).  
It corresponds to stress < 100 MPa and provides > 1E+4 thermocycles.

Temperature along antenna,  
cold configuration, 35kW, full reflection.

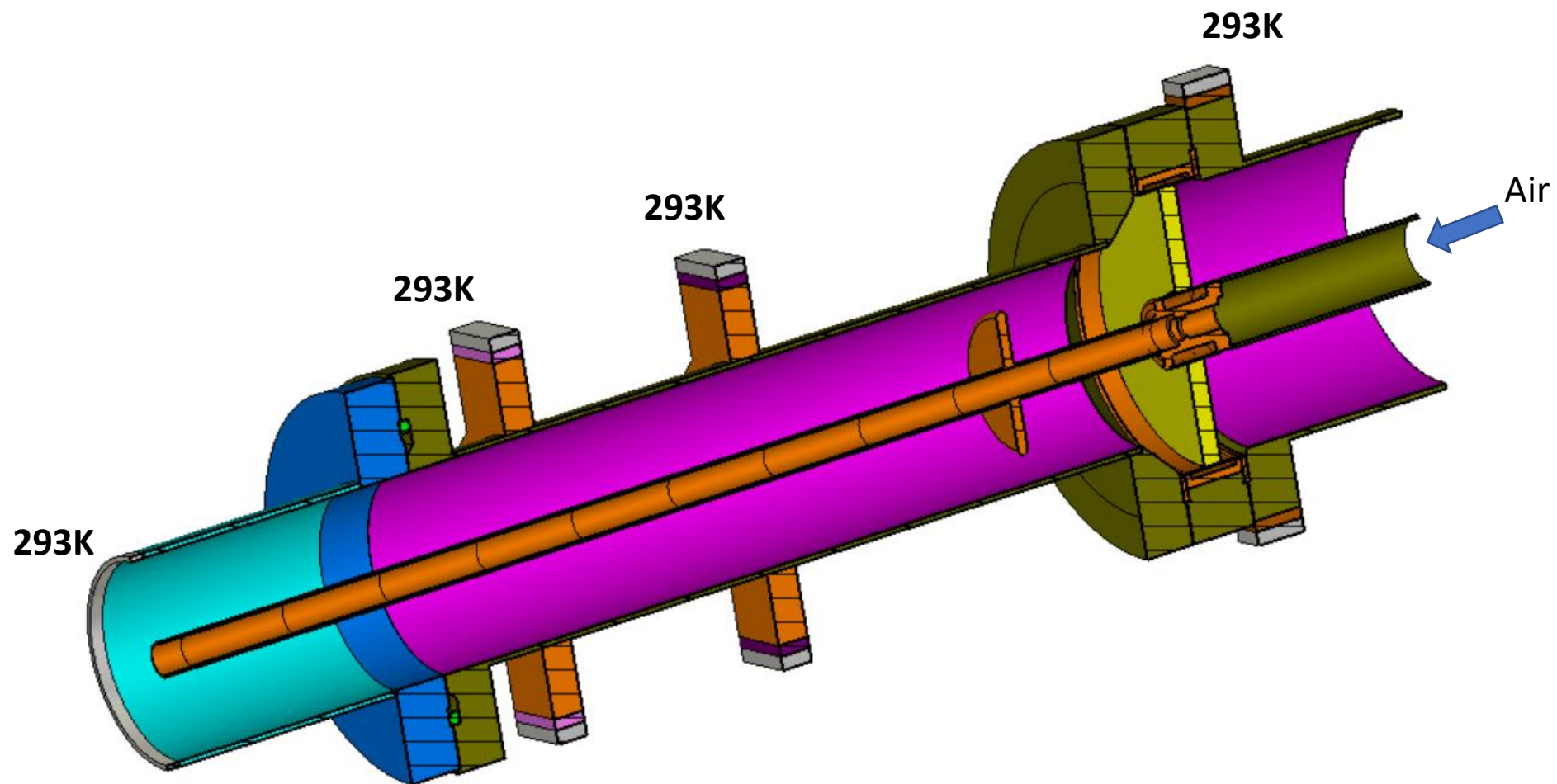


Temperature along antenna,  
cold configuration, full reflection.

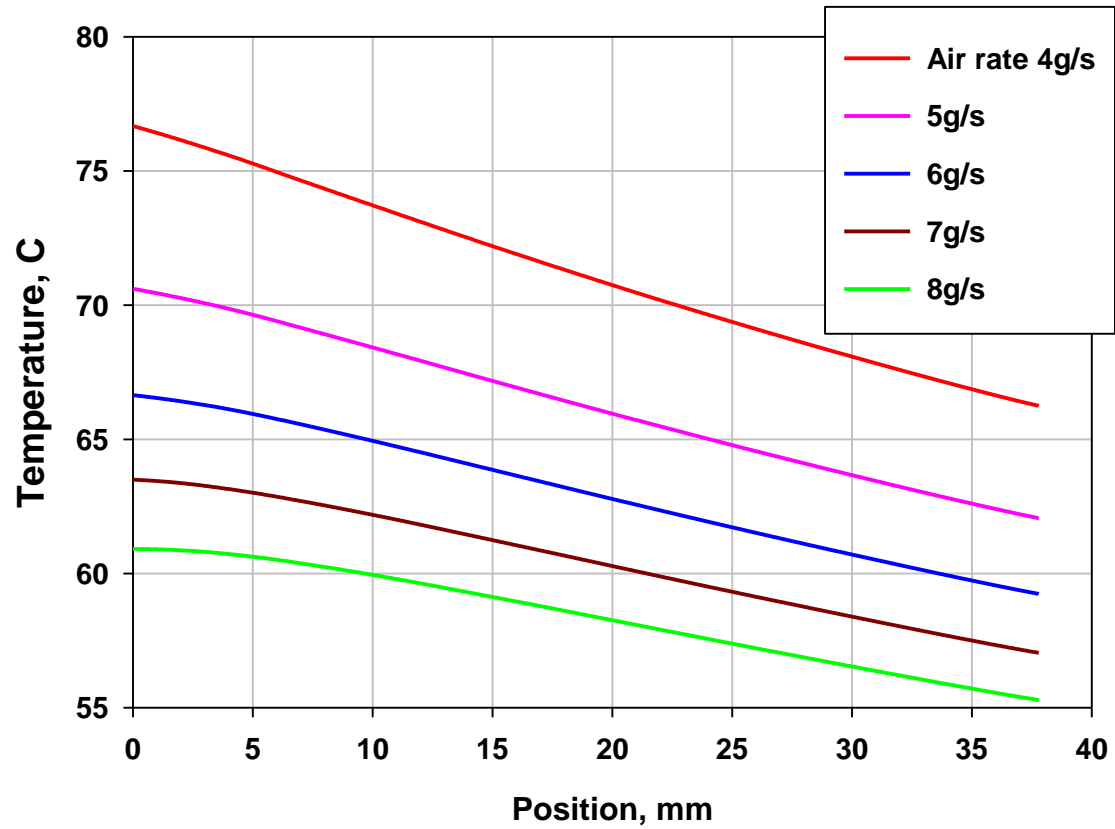


# Room T configuration

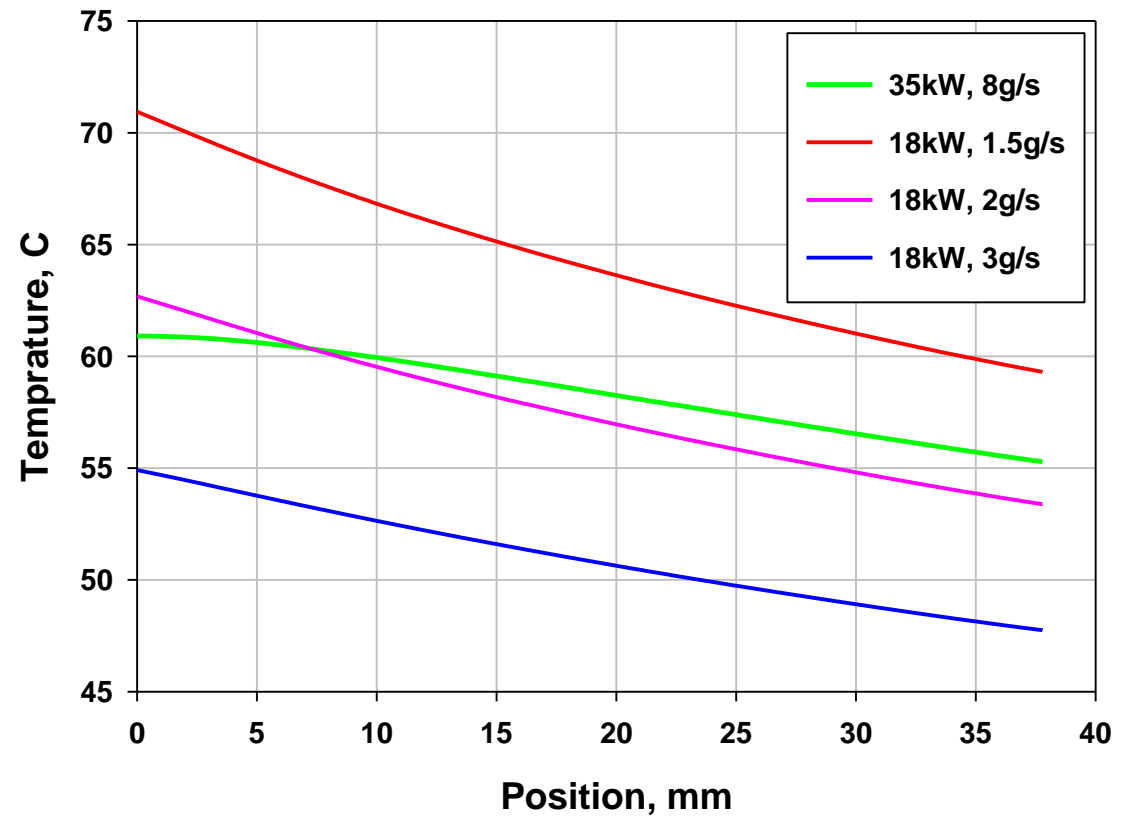
Air rate, g/s	1	1.5	2	3	4	5	6	7	8
H, W/K/m2	65	90	120	150	200	230	250	270	290



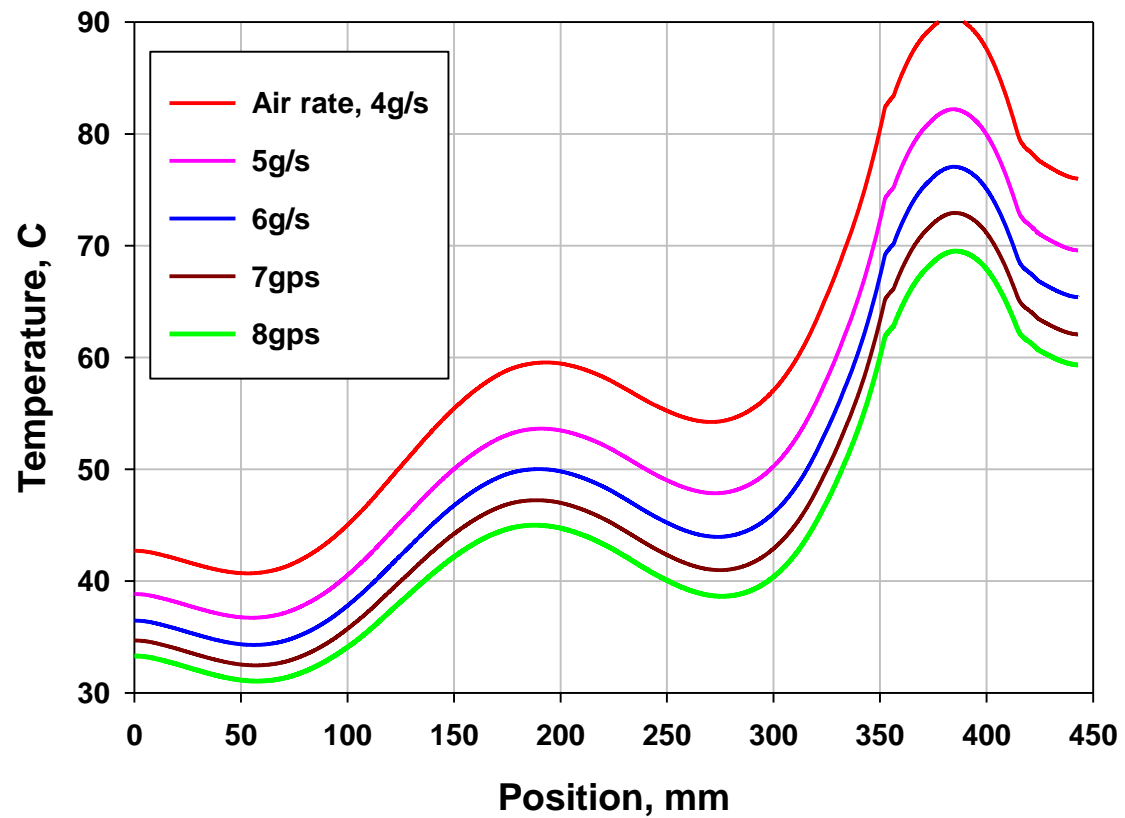
**Temperature along ceramics,  
room temperature configuration,  
35kW, full reflection.**



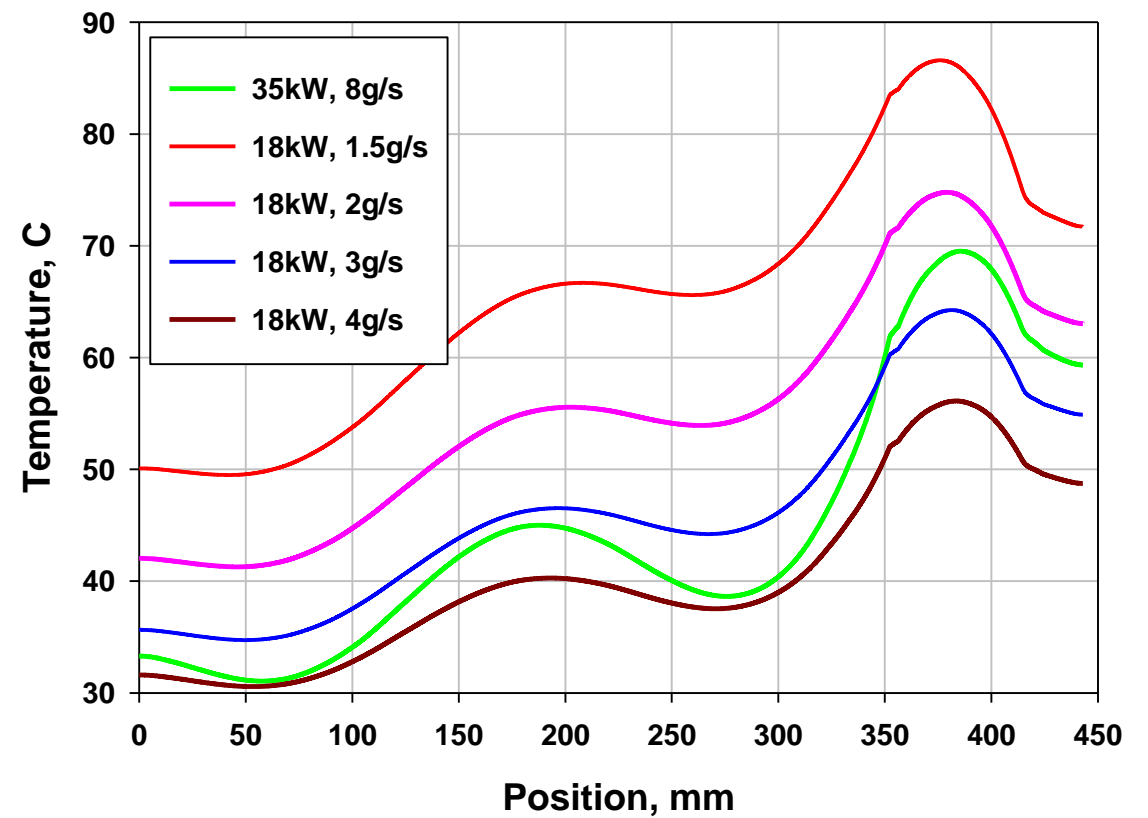
**Temperature along ceramics,  
room T configuration, full reflection.**



Temperature along antenna,  
room temperature configuration,  
35kW, full reflection.



Temperature along antenna,  
room T configuration, full reflection.



## Conclusions:

Cold configuration, 35kW, full reflection: recommended air rate  $\geq 5\text{g/s}$ .

Cold configuration, 18kW, full reflection: recommended air rate  $\geq 2\text{g/s}$ .

Room T configuration, 35kW, full reflection: recommended air rate  $\geq 8\text{g/s}$ .

Room T configuration, 18kW, full reflection: recommended air rate  $\geq 3\text{g/s}$ .

Simulation can be not accurate enough. Criterium should be a temperature of window flange.

We recommend not exceed **55C**.