Gas Burner/Combustor

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Part 1
http://www.lesman.com/unleashd/catalog/combustion/Maxon-Ovenpak-400/Maxon-Ovenpak-400_spec-1992-10.pdf

Data	Source
Q_{in}= 146535 W	Model “400” OVENPAK® Gas Burner Data Sheet Page 2122 | Model Number 405 *Converted from BTU to W*
T_{132} = 632ºC	**Assumed to be at ignition temperature of natural gas**
$\dot{q}''_{out} =$ ***706554 W/m^2*K***	*Calculated from Qin over the cross-sectional area of the throat*
$k_{Air\ @\ 25ºC}$ = 0.02605 W/m•K	Textbook
Flowrate = 0.531 m^3/s (1125 CFM)	Model “400” OVENPAK® Gas Burner Data Sheet Page 2111| EB-1 OVENPAK *Calculated from SCFM at flame temp of Natural Gas (T = 4020 R) and inlet pressure of P = 14.91 psia*
Length = 203 mm	Model “400” OVENPAK® Gas Burner Data Sheet Page 2117| Model Number 405
Diameter of intake = 160.3 mm	Model “400” OVENPAK® Gas Burner Data Sheet Page 2117| Model Number 405
Diameter of throat = 321 mm	Model “400” OVENPAK® Gas Burner Data Sheet Page 2117| Model Number 405
T_∞ = 632ºC	**Assume ignition temperature of natural gas**
T_i = 25ºC	**Assume initial temperature at ambient**
$\dot{q} =$ *522.43 MW/m^3*	*Calculated from heat of combustion of natural*

	gas (i.e., 54 MJ/kg) and a density of 0.689 kg/m^3

Part 2