

BBQ Grill Problem

58:143 Computational Fluid & Thermal Engineering Final Project

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Do you have an experience?



- Taking much time to grill meat
- Cannot grill meat fine
- Getting dark during BBQ

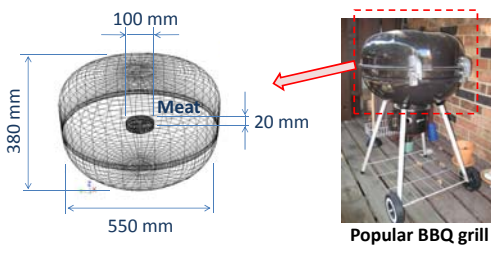
BBQ

- Rely on experience
- Lack of science
- Include complicated phenomenon
(conduction, convection, radiation)

Objective of our project

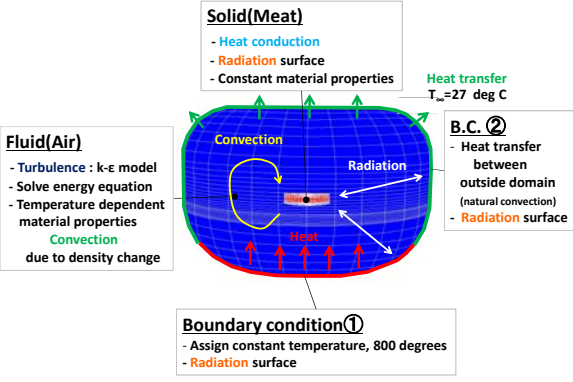
To find an effective way to grill meat

Geometry of BBQ Grill



Shell of the grill and meat are modeled

Model used for our study



Solid(Meat)

- Heat conduction
- Radiation surface
- Constant material properties

Fluid(Air)

- Turbulence : k-ε model
- Solve energy equation
- Temperature dependent material properties
- Convection due to density change

Boundary condition ①

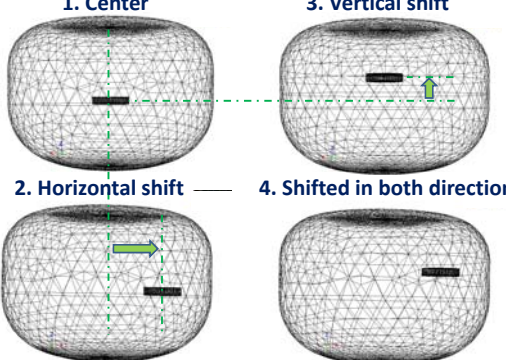
- Assign constant temperature, 800 degrees
- Radiation surface

B.C. ②

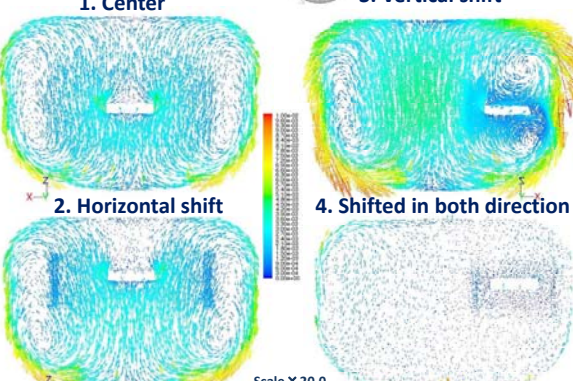
- Heat transfer between outside domain (natural convection)
- Radiation surface

<http://7rinhonpo.jp/archives/50456000.html>

Meat positions



Velocity vectors – ELLIPSE grill



Scale X 20.0