

Method for separately estimating generalized thermal conductance due to wall heat transmission and air movement in both directions

Heat transmission
 $u_{i,j}$ is symmetry

From the gas transfer network
Air flow rate $q_{i,j}$ is identified

$$C_{i,j} = u_{i,j} + c_p \cdot \rho \cdot q_{i,j} \quad (10)$$

$$C_{j,i} = u_{j,i} + c_p \cdot \rho \cdot q_{j,i} \quad (11)$$

Subtracting the above equations (10) and (11),
obtain the following equation (12) and incorporate
it into **S** and **d** of the constraints equation (5).

$$C_{i,j} - C_{j,i} = c_p \cdot \rho \cdot (q_{i,j} - q_{j,i}) \quad (12)$$

The asymmetric $c_{i,j}$ and $c_{j,i}$ are estimated using the least
squares method.

Then, the symmetric overall heat transfer $u_{i,j} = u_{j,i}$ is solved.

System Identification model for
thermal network

