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TRNSYS 18

Wall Constructions - Boundary conditions

a) Userdefined Boundary ($h_{\text{back of surface}} > 0.001 \text{ kJ/m}^2\text{K}$)

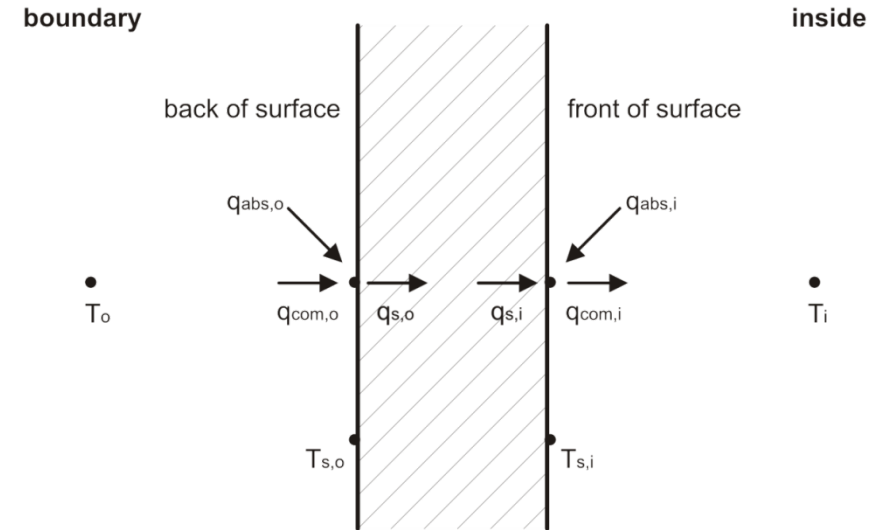
For userdefined Boundary constructions, if $h_{\text{back of surface}} > 0.001 \text{ kJ/m}^2\text{K}$

$$T_o = T_{\text{boundary}}$$

$$h_o = h_{\text{back of surface}}$$

$$\begin{aligned} q_{\text{com},o} &= q_{s,o} - q_{\text{abs},o} \\ &= h_o \cdot (T_o - T_{s,o}) \end{aligned}$$

$$q_{\text{abs},o} = 0$$



b) Userdefined Boundary ($h_{\text{back of surface}} \leq 0.001 \text{ kJ/m}^2\text{K}$)

For userdefined Boundary constructions, if $h_{\text{back of surface}} \leq 0.001 \text{ kJ/m}^2\text{K}$

$$T_o = T_{so} = T_{\text{boundary}}$$

$$q_{so} = q_{\text{com}o} + q_{\text{abs}o}$$

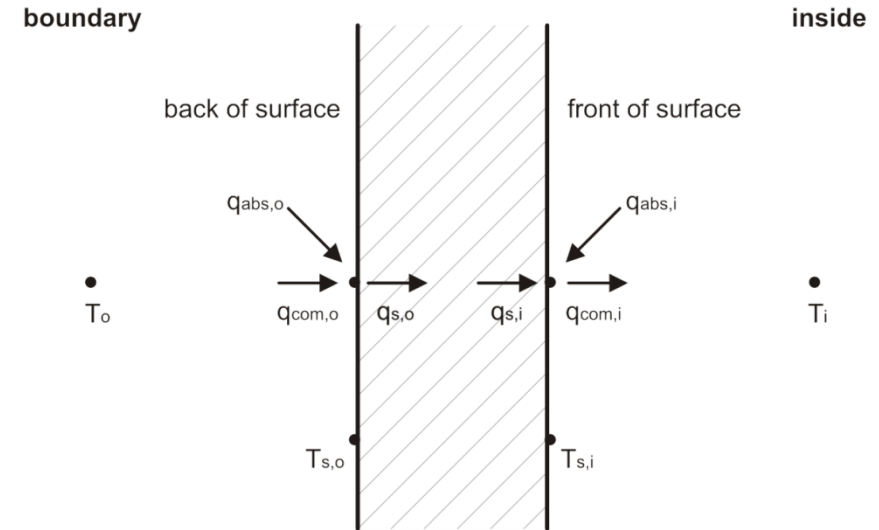
$$q_{si} = q_{\text{com}i} - q_{\text{abs}i}$$

$$q_{\text{abs}o} = 0$$

If wall construction is symmetrical:

$$q_{so} = -q_{si}$$

$$q_{\text{com}o} = -(q_{\text{com}i} - q_{\text{abs}i})$$



wall type:	ADJ_WALL_HBACK0001	<-- new ...
area:	16	m ²
category:	BOUNDARY	
geosurf:	0	10
wall gain:	0	kJ/h
coupling air flow:	0	kg/h
coupl. rel. humidity:	0	%
boundary conditions:	<input checked="" type="radio"/> userdefined <input type="radio"/> identical	
	: 1*T_SL_S10	°C

c) Boundary Identical

For userdefined Boundary constructions, if $h_{\text{back of surface}} \leq 0.001 \text{ kJ/m}^2\text{K}$

$$T_o = T_i = T_{star}$$

$$h_o = h_i = \frac{1}{R_{eqv} \cdot Area}$$

$$q_{abso} = q_{absi}$$

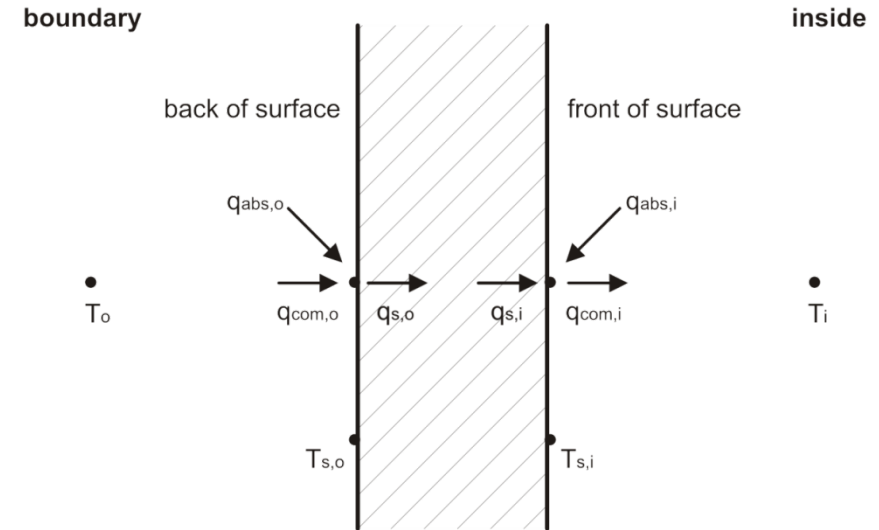
$$q_{so} = q_{como} + q_{abso}$$

$$q_{si} = q_{comi} - q_{absi}$$

If wall construction is symmetrical:

$$q_{so} = -q_{si}$$

$$q_{como} = -q_{comi}$$



wall type:	ADJ_WALL	<-- new ...
area:	16	m ²
category:	BOUNDARY	
geosurf:	0	10
wall gain:	0	kJ/h

boundary conditions: userdefined identical

Comparison for symmetrical wall

ZONE EG_EB

RADIATIONMODE

BEAM=DETAILED : DIFFUSE=DETAILED : LONGWAVE=DETAILED : GEOMODE=3D_DATA : FSOLAIR=0

AIRNODE EG_EB

(1) WALL =ADJ_WALL : SURF= 10 : AREA= 16 : BOUNDARY=IDENTICAL

(2) WALL =ADJ_WALL_HBACK0001 : SURF= 10 : AREA= 16 : BOUNDARY=INPUT 1*T_SI_S10

ZONE OG

RADIATIONMODE

BEAM=STANDARD : DIFFUSE=STANDARD : LONGWAVE=STANDARD : GEOMODE=3D_DATA : FSOLAIR=0

AIRNODE OG

(1) WALL =ADJ_WALL : SURF= 14 : AREA= 48 : BOUNDARY=IDENTICAL

(2) WALL =ADJ_WALL_HBACK0001 : SURF= 14 : AREA= 48 : BOUNDARY=INPUT 1*T_SI_S14